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Following a consideration of the middle school and the educational concepts involved, profiles are presented of eleven middle schools designed with a sense of innovation, adaptability, and matching institutions to the needs and potentials of children. Some of the schools are wholly committed to innovation from team teaching to ultimate nongradedness, but others follow fairly conventional classroom patterns for the present. The descriptions emphasize why the schools were designed as they were, and how they were designed and built. Schematics and photographs are included along with an evaluation of the schools relative to the programs for which they were planned. (FS)

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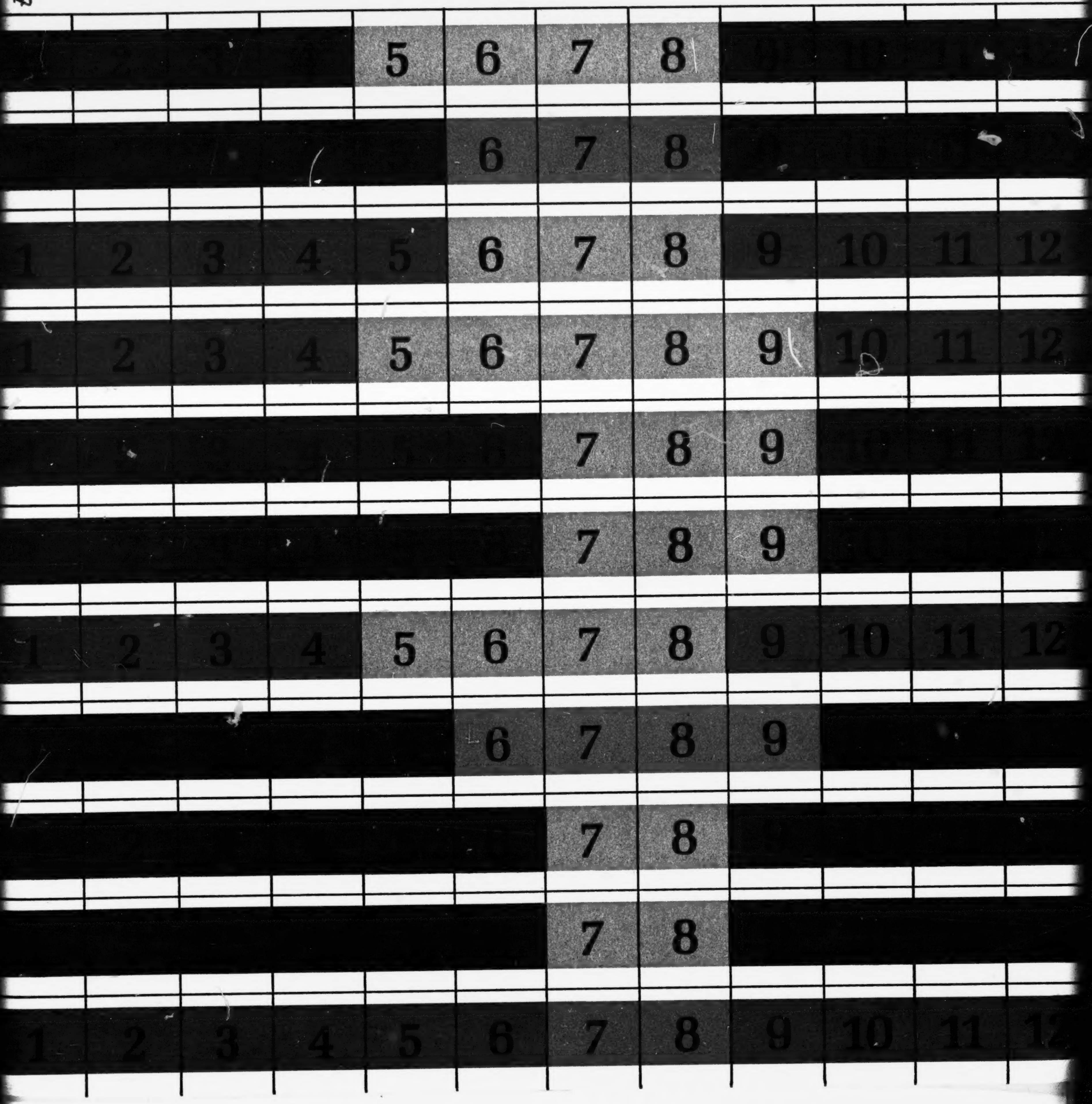
A REPORT FROM EDUCATIONAL FACILITIES LABORATORIES

Middle Schools

PROFILES
OF
SIGNIFICANT
SCHOOLS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Middle Schools

by Judith Murphy

EDUCATIONAL FACILITIES LABORATORIES

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PART I

If you say "middle school" to the average parent or schoolboard member, he will probably think you're talking about any junior high school. A fully accredited member of the educational fraternity who keeps up with his trade papers will know you are talking about an alternative to the traditional junior high. And if you say "middle school" to a resident of Little Rock, Ark., or Pleasant Hills, Pa., or Tiburon, Calif., or Mount Kisco, N. Y., or Amory, Miss., you will conjure up the particular kind of middle school recently established in the community or a-building there. The difference between one of these new middle schools and another is almost as great as the difference between Amory, say, and Mount Kisco. But though these schools come in a variety of shapes and sizes, the variations have enough important points in common to constitute, as a group, something new under the educational sun.

The designated institution is essentially just what the name suggests—an intermediate school, a school in between two other schools. In a way, it is no misfortune that the middle-school concept is as fluid as it is. There is a case to be made for keeping it so, and for not endowing this new kind of school with a full-fledged rationale.

The individual schools presented in this report share a sense of freshness, of innovation, of adaptability, of coming a bit closer than past efforts to matching institutions to the needs and potential of children from 10 to 14 or so. Within this broad consensus, the schools show all kinds of variation. All of them are (or will be) housed in new buildings designed to serve new purposes. Some of them are wholly committed to innovation from team teaching to ultimate nongradedness, but others follow fairly conventional classroom patterns for the present. Your true believer in the middle school as a new and distinctive institution construes the acceptable pattern as grades 6 (or 5) through 8: the six schools included in Part II follow this scheme (though two of them include grade 9). The schools in Part III follow other patterns—7–8, as is true of the three California schools, and plain old 7-8-9. Kennedy Junior High in Natick, Mass., for instance, retains the name as well as the familiar junior-high grade range, but it illustrates the exciting possibilities of a school imaginatively designed for its population. All the schools stand on their own. They are not watered-down high schools.

Since we are dealing with a real Humpty-Dumpty word ("when *I* use a word, it means just what I choose it to mean," Lewis Carroll has him say), an *ad hoc* definition is in order. "Middle school" as used in this report designates a school in between elementary and high school, housed separately and, ideally, in a building freshly designed for its purpose, and covering at least three of the middle school years, beginning with grade 5 or 6. Most middle schools presume, in ultimate plan if not in present reality, the four-year high school beyond. Through its physical layout and instructional program, the middle school tries to take better account than the conventional junior high of the needs and abilities of between-age youngsters and to use—or at least anticipate—a variety of instructional innovations and groupings. The imaginative disposition of space, keyed to an unknown educational future, marks the best of the schools. If the middle school is kept unfrozen, in program as well as physical design, it can serve as a true expansion link in the school system, adding or subtracting grades to meet changing enrollment pressures.

To date there are not very many of these new middle schools—perhaps, depending on the strictness of the definition, a few dozen scattered across the United States—and at their most characteristic, they embody both architectural and educational flexibility in the best sense of that overworked term. Attempting to meet the needs of the vulnerable and volatile population of pre-adolescents they enroll, these schools will learn by doing. If they prove to be pace-setters, the name "middle school" will earn its own more precise definition.

It is unrealistic to suppose that this new kind of school will—or even should—replace the junior high everywhere. There is, after all, a congeries of factors that determine school organization in any given community—from demography to economics to law to politics to real estate. Many school systems, for one reason or another, cannot redress their organization of grades. Other systems, notably in big cities with inadequate funds and compounded social problems, may achieve reorganization, but without the full complement of facilities that mark the schools, largely suburban, described in this report.

There is, in short, no intention of suggesting here that the new middle school is the only route to better education for pre-adolescent children. It is, however, a lively possibility for school systems whose logistics permit such a solution. And for other systems where traditional organization seems likely to prevail indefinitely, middle schools may provide working examples of physical and instructional innovations that could improve any sort of intermediate school, however organized.

It appears now that what may foster the middle school as part of a new 4-4-4 pattern will be not so much the exemplary effect of pioneering schools. The value of the new pattern may be in helping to solve problems that are primarily social or economic or administrative rather than purely educational. Big cities across the land trying to cope with the pressures of *de facto* segregation, decrepit slum schools, Negro boycotts, intransigeant white parent groups, and deficient budgets see more than a glimmer of hope in the 4-4-4 or 5-3-4 system.

Denounced for playing the "numbers game" by embattled junior-high administrators and their adherents, city superintendents and school boards are showing increasing interest in the possibilities of achieving a variety of desirable ends by rearranging the grades within school systems. More often than not, *de facto* segregation is a compelling force. The issue between integrationists and their foes has been joined in the neighborhood-school controversy. With racial imbalance most severe in the six-year elementary schools, one hopeful compromise is a reorganization that would keep the neighborhood pattern for the youngest children but limit it to four or five grades. Children could then move out to middle schools serving a larger, and potentially more racially balanced, area. Then, at the end of eighth grade, they would move on to the high schools, which are characteristically the best integrated element of any school system. A marked tendency among some educators to retain or restore the 4-year high for purely educational reasons also contributes heavily to acceptance of the 4-4-4 concept.

These are among the powerful forces, stemming from developments having little or nothing to do with the educational virtue of middle schools *per se*, that are working toward their establishment in Boston, New York, Pittsburgh, New Haven, and other cities where plans are at various stages of discussion or action.

Pittsburgh, for instance, has been working for some time on a plan that will convert the school system to a 5-3-4 organization over perhaps a 10-year period. One of the planning committee's working papers has this to say, in part, about the middle school:

> The "Middle School" will exist as a school in its own right, free of the image of the senior high school and free to serve as an educational laboratory for the early adolescent. It would serve as a transitional phase between the paternalism of the neighborhood elementary school and the varied, departmentalized environment of the senior high school. The school would depart fundamentally from elements of the present junior high school which contribute to early sophistication and its undesirable by-products. Techniques, programing, and curriculum would provide for maximum flexibility of scheduling to provide for varying rates, interests, and abilities. Emphasis would be given to an educational program which would provide for the development of individual study skills and their related individual responsibility. . . .
>
> The Middle School is envisioned as a community oriented educational center which would provide a natural evening meeting place for adults, serving their intellectual and social needs in an environment compatible with and related to the educational leadership role of the school and its staff. The concept would flower and mature to the extent that traditional and restrictive conventions such as "gradedness" are recognized as guidelines to be evaluated, rather than arbitrary dictates to be followed. Provisions for cooperative teaching will be made in the program as well as the plant to house this new school.
>
> The new technology of team teaching, programed learning, and television education will find a natural acceptance in the environment of the Middle

School for the new organization will encourage creativity on the part of administrators, supervisors, and teachers.

New Haven has adopted the 4-4-4 plan for reasons that include more effective use of existing plant, a general disposition in favor of the four-year high school, disenchantment with the junior high as currently constituted, and a desire for better racial balance in the schools. Until the new, Saarinen-designed high school is ready in September, 1966, there will be no middle school as such, unless one counts the 5-8 section of the handsome new Conte School on Wooster Square, an integral part of the city's urban-renewal development.[1] This school, which opened in September, 1962, enrolls about 180 children in grades 5 through 8, and nearly 500 in kindergarten through 4. Grades 6 through 8 are departmentalized, and have special facilities for shop, home economics, art, and science. The middle school children share music, art, and physical-education teachers with children in the primary grades.

New Haven will shift its ninth-graders into the new high school and convert the 4 existing junior highs into middle schools. Ultimately the city expects to have 10 middle schools, including 4 new ones. Laurence G. Paquin, who is New Haven's superintendent until July, 1965, when he becomes superintendent in Baltimore, is a firm believer in the values of the new kind of middle school, especially for cities. "In places like New Haven, or larger," he says, "the youngster is dumped from elementary school into a huge junior high and is lost." He has a hunch New Haven's middle schools will start off with the fifth-graders in self-contained classrooms, gradually "weaning away" sixth- and seventh-graders to departmentalized instruction. It seems probable that teaching teams will play an important role in the process.

The New Haven plan is based on the 1961 report done for the Board of Education by Cyril G. Sargent, professor of education, (then at Harvard, now at the College of the City of New York). This wide-ranging report, which stressed the value of tying school organization and construction into civic redevelopment and neighborhood improvement, advocated the adoption of a 4-4-4 plan for the city's schools. Dr. Sargent is an eloquent exponent of the advantages of such reorganization to children at all levels. He believes that the four-year high school facilitates "a more sustained and vigorous education program" through the high-school years, that the small K-4 neighborhood school can be especially designed for the very young, and that the 5-8 middle school can bring to children in these grades improved curriculum and stronger guidance.

In late April, 1965, the New York City Board of Education made the headlines by a statement of policy, adopted unanimously, that proposed a complete reorganization of the school system by 1973, with changes to get under way by September, 1966. Among the key elements of the plan were these: 1) abolition of all 138 junior high schools; 2) creation of new "intermediate" schools starting with fifth or sixth grade and running through eighth; 3) establishment throughout the city of four-year comprehensive high schools. The statement, which was entitled

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[1] *The Schools and Urban Renewal: A Case Study from New Haven*, by Terry Ferrer (New York, Educational Facilities Laboratories, Inc., March 1964).

"Excellence for the Schools of New York City," laid equal stress on the need for high-quality instruction and racial integration; Board President James B. Donovan declared that it was impossible to conceive of "excellence of education" without both components "in this multiracial city at this time." The proposal envisaged a flexible arrangement that could produce a 4-4-4 or a 5-3-4 pattern, or perhaps both. Of the intermediate schools, the statement said in part:

> The exact grades of this new program are not as important as are its nature and content. This period of education must take the child from his elementary concentration on basic skills to the use of those skills in the acquisition of knowledge and the development of human and social relationships.

As will become evident in looking at representative middle schools now, or about to be, in operation, diversity is the keynote. Least important of all, as suggested earlier, is the precise scheme of grades. The schools themselves support the strict 4-4-4 doctrinaires no more than they do the junior-high traditionalists who see themselves victims of somebody else's numbers game. Proposals by state and city educators to reorganize New York City schools on a 4-4-4 basis have stirred up considerable furore, particularly among junior-high administrators who object to the notion of displacing the ninth grade. Some measure of the strong feelings such proposals have generated can be gleaned from the advertisements placed by the Junior High School Principals Association in *The New York Times* and elsewhere. In mid-March, 1965, the Association followed up its advertising campaign with a strong counterattack that very nearly reduced the numbers game to absurdity. Introducing what the *Times* called "a hitherto unmentioned reorganization pattern," the principals called for a 3-3-3-3 plan.

PARENTS:

The Junior High School Principals Association Believes Your Ninth Grade Child Belongs in Junior High School

BECAUSE

1. Your child is an important individual on a full-time program in a 1500 pupil junior high school—not a lost soul in the afternoon session of a large senior high school.

2. The junior high school has the program and facilities to provide enriched experiences in art, music, science, creative writing and extra-curricular activities—not available to late session freshmen in an overcrowded senior high school.

3. Junior high school teachers know and are trained to meet the special needs of early adolescents.

4. The present junior high school program increases the likelihood of future educational success for your child.

5. QUALITY INTEGRATED EDUCATION can be achieved within the present 7-8-9 junior high school framework and without wasting millions moving the ninth grade—MILLIONS MUCH BETTER SPENT ON MEANINGFUL INTEGRATION.

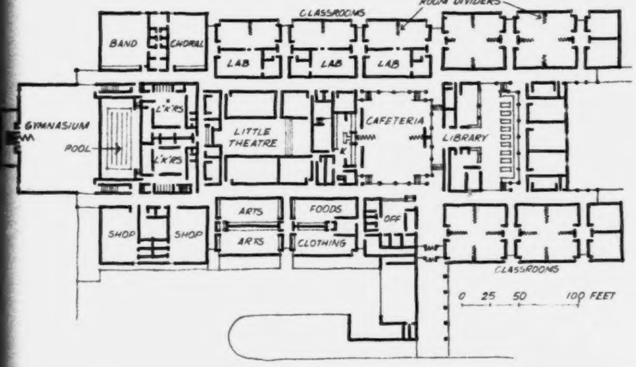
Principals Do Have Principles. We Want What Is Best for Your Child.

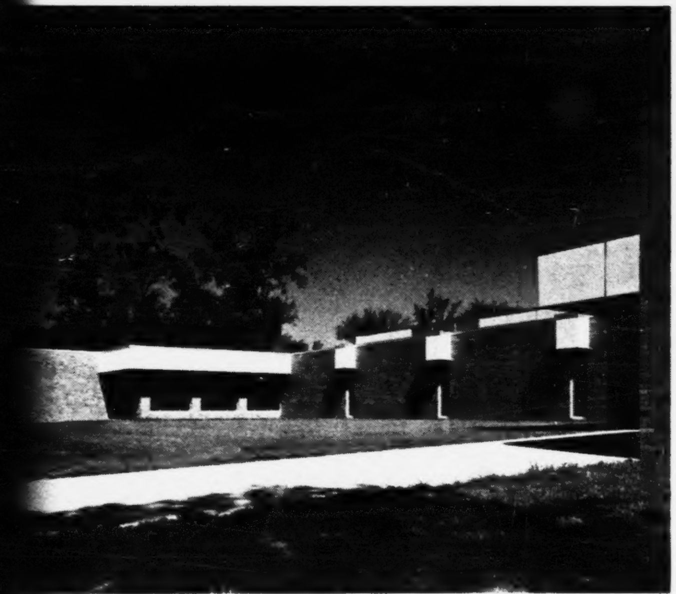
For further information, communicate with: James G. Murray
John Ericsson Junior High School, Brooklyn 22.

The schools in Part II of this report constitute, in effect, a middle-school anthology. Obviously, other schools meeting major criteria of a middle school might have been included—for instance, the two middle schools of Saginaw, Mich., which EFL profiled when they were under construction.[2] In operation since 1960, the twin schools (one compact, one campus-plan) represent in a sense the middle-school archetype: they exerted, for example, a ponderable influence on the schools in Amory and Pleasant Hills. As it happens, Saginaw affords an ironic illustration of the use of flexibility—in this case, in reverse. Conceived and planned by a superintendent who left the district before the buildings were completed, the schools opened with a staff generally committed to the self-contained classroom and conventional instruction. The openness of the original plan was ignored or outwitted, in part by a successful campaign to wall off corridors originally designed as common space between classrooms.

For four years, the Saginaw middle schools did little about the instructional innovations their design was to facilitate. Now, however, a change is in process, and it constitutes a salutary lesson in the politics of education. Fully supported by the district's administration, a new crop of teachers is making enthusiastic plans to exploit the schools' flexibility to the hilt in organizing teaching teams, instructional groups of various sizes, and a modular schedule, with complete nongradedness in view for three years hence. The drive to try new ways of teaching and new ways to group children is coming from the staff itself. Four years ago, by contrast, both building and program were planned from the top down, and the teachers, unprepared and unconvinced, in effect scuttled the program.

Jefferson Intermediate School
Midland, Michigan





Part III of the report sets forth five intermediate schools—schools that share the middle-school concept while adhering to more conventional grade organization. Here, too, other examples could have been included—for instance Jefferson Intermediate School, in Midland, Mich., or the Southern Hills Junior High School,, in Boulder, Colo. Both schools enroll the conventional junior-high grades 7 to 9. Designed by Alden B. Dow Associates, Jefferson opened in January, 1964, in the thriving, self-contained community that is the site of the "world's largest chemical complex" (Dow Chemical). The school illustrates the new look in intermediate schools, with such distinctive features as a little theater and an "instructional" swimming pool. The school is air conditioned throughout; yet construction costs including the pool were held to a low $12.75 per square foot.

The Boulder school opened in September of 1964. The library plays a central role, and is destined to be even more important in the future. While it is larger than any other junior-high library in the district, it is not so large as architect and administration think it should be. Future expansion can be readily achieved in stages.

* * *

Intermediate schools, by whatever name, are trying to take account of the special needs and capabilities of children in the years between

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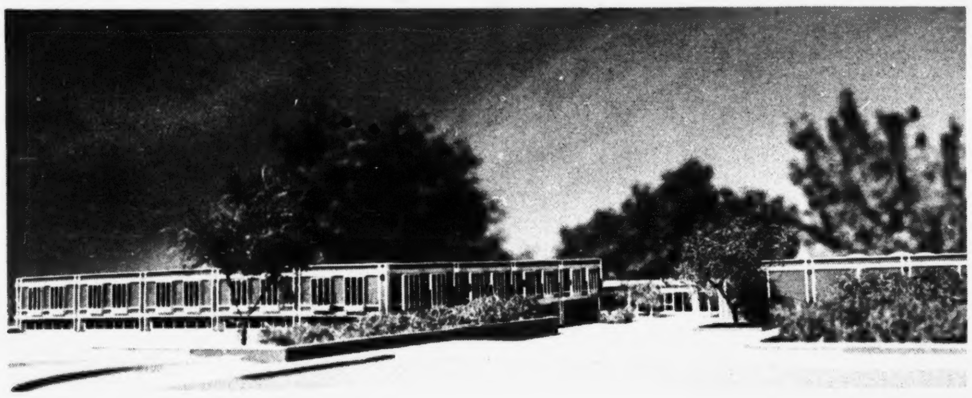
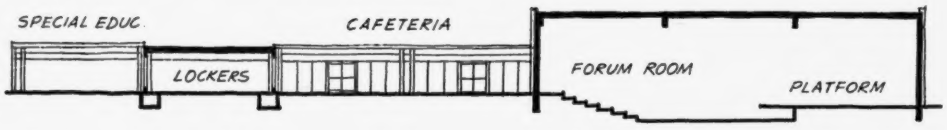
[2] Two *Middle Schools, Saginaw Township, Michigan* (New York, Educational Facilities Laboratories, Inc., 1960).

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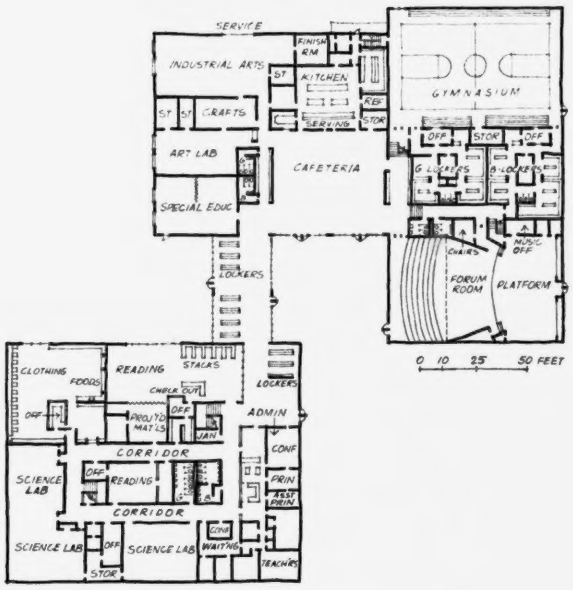
FORUM ROOM
PLATFORM

Southern Hills Junior High School
Boulder, Colorado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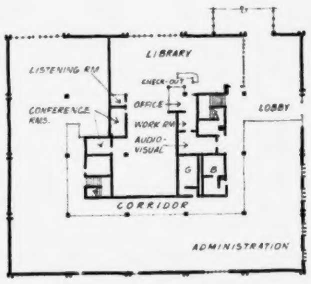
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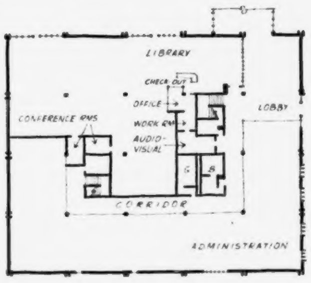
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PHASE II EXPANSION

childhood and adolescence. Boys and girls from 10 to 14 or so exhibit a social, physical, psychological, and intellectual range that bursts the confines of grade patterns and of plain chronology. What they need above all is to be treated and taught as individuals. Insofar as this ideal is realized, it seems to make no great difference what particular age groups are put together for instructional or administrative convenience. That arch-exponent of the possible, James B. Conant, concluded that "because of wide diversity in school organization, professional disagreement, and my own observations...the place of grades 7, 8, and 9 in the organization of a school system is of less importance than the program provided for adolescent youth."[3] Ordinarily at the opposite end of the educational spectrum is Robert Finley, superintendent of schools in Barrington, Ill., where a new middle school is now being built. The Barrington School will be a "true" middle school, embracing grades 6 to 8—but like Dr. Conant, Dr. Finley couldn't care less about this detail. Mauritz Johnson, Jr., a professor of secondary education at Cornell and a leading critic of the conventional junior high, dispatched the grade-range issue as follows, in a 1963 article called "The Magic Numbers of 7-8-9."[4]

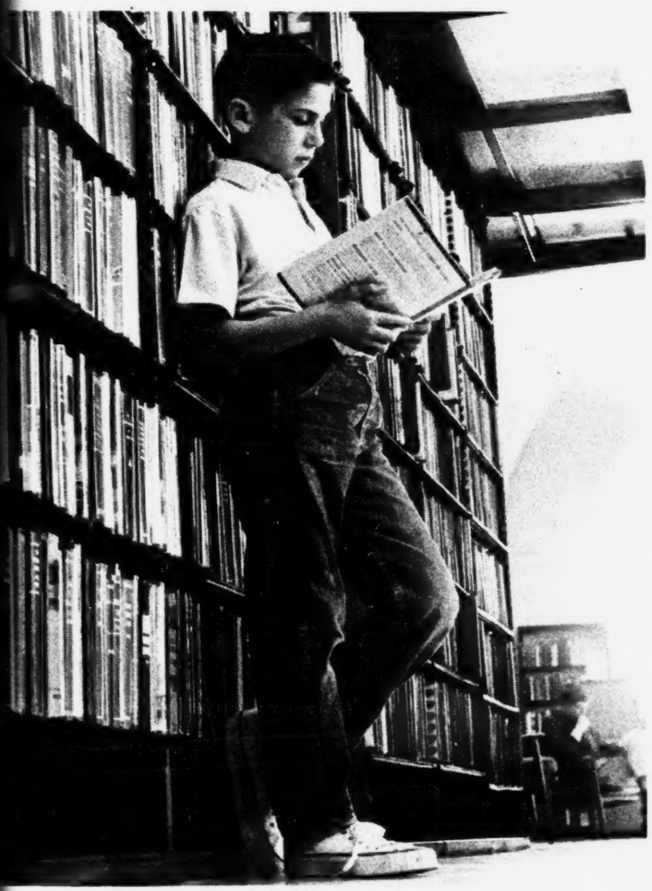
> The decision as to form of organization will have to be made on practical grounds and on the basis of social and administrative viability. Any pattern is satisfactory that gives *identity* to youths during early adolescence, includes at least three grades for *stability*, and *brackets* those grades in which significant numbers of pupils reach pubescence.

Obviously Professor Johnson's formula offers wide room for alternative solutions. And, as we shall see in taking up particular middle schools, his requisite *stability* factor is frequently put aside on practical grounds if not by choice. Furthermore, there is not yet a consensus, either theoretical or empirical, on the grades—or more relevant, the ages—that are best *bracketed* in a school of their own.

There is much still to be learned and understood about the children for whom intermediate schools are designed. Observations here and there offer provocative insights. So does recent research in cognition and creativity, with its recognition of styles and levels of learning and perception. But many questions remain unfathomed. Even Jerome Bruner has been known to interrupt one of his own eloquent expositions of the newly recognized potential of the youngest children to exclaim, like any common parent, over the complexity of the young adolescent and the dilemma of his proper schooling. And that wise and notably gentle man, the late Matthew Gaffney, was moved to verbal violence after exposure

3. *Recommendations for Education in the Junior High School Years*, by James B. Conant (Princeton, Educational Testing Service, 1960).

4. *NEA Journal*, March 1963, pp. 50-51.



to conditions in big-city schools in the course of collaborating on the Conant junior-high report. Dr. Gaffney once told an interviewer that on sleepless nights he indulged himself in a fantasy where he (an unlikely dictator) decreed punishment to fit various educational crimes. His sentence for Admiral Rickover, whose classical prescription for the schools was commanding peak publicity: a single day as principal of, say, a New York City junior high in the heart of Hell's Kitchen.

Among the most engaging and thought-provoking observations on intermediate children are those of Robert B. Davis, director of the Madison (new math) Project at Webster College, and a virtuoso teacher who has spent years teaching demonstration classes across the country. In a paper dealing with the development of a theory of instruction, Dr. Davis takes time for a long aside on the nature of seventh and eighth graders.[5] The immediate context was his statement of a project criterion: "The experiences should be appropriate to the age of the child." This, he says, sounds like a truism, but "in ordinary education . . . seems honored mainly by noncompliance." The rest of his discussion of the point is worth quoting in full:

> We are finding, in our admittedly limited experience, that fifth graders (age about 10 years, chronologically) are "natural intellectuals," and can enjoy choosing a set of algebraic axioms and proving a variety of algebraic theorems from them. (This topic was formerly encountered in the latter years of college, or in graduate school.) By contrast, seventh and eighth graders are *not* "intellectuals"; it might come closer to say they are "engineers" at heart. For 7th and 8th graders, the usual school regime of sitting at desks, reading, writing, and reciting seems to ignore the basic nature of the child at this age; he wants to move around physically to do things, to explore, to take chances, to build things, and so on.

At this point, Dr. Davis drops the following outsized and delightful footnote:

> The importance of this question should not be overlooked. None of my reading in psychology, nor most of my contacts with psychologists, have attached much special importance to the 5th-6th-7th-8th-grade developmental pattern. Yet for virtually every one of the "new curriculum" projects in mathematics and science which deal experimentally with this age range, this is the single decisive, elusive, and discouraging phenomenon. The 5th grader is very good at mathematics and science. The *same* child, at grade 6, begins to perform less well. In grades 7 and 8 he is usually a total loss—he will perform routine tasks to a mediocre standard, but in situations calling for great creativity he usually creates chaos.
>
> Since encountering this catastrophe, we have accumulated about 20 alternative explanations, from psychoanalysts, teachers, physiologists, and parents. They include: (i) the sex theory: a sexual revolution and awakening is occurring, and all else is secondary; (ii) the energy theory: the child's energy is tied up in physical growth (which occurs rapidly at this age); (iii) the metabolic theory: the child's metabolic rate shifts, and it takes him several years to adjust his behavior to the new metabolic rate; (iv) the "noise" theory: everything we teach is wrong; by grade 6 the child has been in school

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[5] Robert B. Davis, "The Madison Project's Approach to a Theory of Instruction," *Journal of Research in Science Teaching*, vol. 2, pp. 146-162 (1964).

long enough to accumulate so much misinformation that he is lost; (v) the "nobody loves junior high school" theory: junior highs get the almost-discarded buildings, the almost-discarded teachers, and the almost-discarded objectives and methods; (vi) the peer-group theory: the 5th grader loves adults; the 7th grader knows better, and believes his contemporaries, unpromising though they appear, are in the long run a better bet; (vii) the neo-Pareto theory: every generation has to take over from its elders, and grade 7 is the place to start; (viii) the "finding yourself" theory; (ix) the "finding reality" theory: 5th graders are remote from reality and allow themselves an interest in abstract things; a 7th grader is becoming sensitive to power, and so he demands more "practical" employment; (x) the "poor self-concept of the junior high teacher" theory: high school teachers really want to be college teachers, and commit the folly of frustrated emulation; junior high teachers imitate the imitators, and that's even worse. Many other theories have been proposed.

With our curiosity thus whetted for theories from xi on, Dr. Davis returns to the mainstream of his argument:

> At this age we prefer to get the children out of their seats and, where possible, to get them out of the classroom and even to get them out of the school. We do vector problems by hanging twenty pound weights on yarn, and predicting whether the yarn will hold or will break; we do graphical differentiation and rate-of-change problems in the context of velocity and acceleration, using actual automobiles in the school driveway; we determine the height of the school flagpole by similar triangles; and so on.
>
> We do not know whether we are on the right track or not, but to our amazement we find no established and well-accepted theory to help decide this problem: what *kind* of school experience should the 7th and 8th grader have? In our own clinical interviews with children of this age, we find they greatly prefer "moving around" subjects (like gym, dancing, shop, art, music, home economics, science laboratory, etc.) over sedentary subjects (such as Latin, English, mathematics, and social studies).
>
> We need to understand this far more than we do; in the meantime, we are asking ourselves if mathematics, social studies, etc., *need* to be sedentary subjects at this grade level. (Notice that *traditional* dogma emphasizes physical activity for *younger* children—some of whom, in our experience (e.g. fifth graders) do not especially require it—but places *less* emphasis upon physical movement for the older 7th and 8th graders. Obviously the over-all school program must be considered as a causal factor, also; the younger children, in most schools, may "get enough" chance for physical movement, whereas in junior high school they may not.)

Robert Davis, it will surprise no one to learn, is excited about the emerging concept of the middle school. As he says: "The methodology of the traditional school, and the objectives of our [Madison Project] materials, are normally at war with one another." He thinks the new middle school points to a hopeful direction in resolving the war, adding that "it is precisely at this age level that the war is most acute."

To set the middle school in context, it will be useful to look briefly at the general state of junior-high education today. Off to a slow start in the early 1900's, the junior high gained momentum from 1920 on, until now there are some 5,000 junior high schools in the U.S. The commonest form of organization in cities and suburbs brings together grades 7-8-9 to form the middle link of a 6-3-3 system; small communities and rural districts are apt to follow the 6-6 pattern. There is a variety of other organizational patterns, including the oldtime 8-4 that prevailed when Americans now aged 50 or beyond went to school and that still prevails in many places.

The first junior highs were organized early in the century for worthy reasons that almost immediately became irrelevant. In 1905, some two-thirds of all pupils quit school before grade 9, and thoughtful educators sought an institutional means to give children some rudiments of secondary education and a little vocational training. A practical answer seemed to be the creation of a new two- or three-year unit embracing the last year or two of grammar school plus the freshman year of high school, now rechristened "ninth grade." The original architects of the junior high conceived it as terminal education for some of the students enrolled, and as a helpful introduction to high school for those equipped and financially able to continue their education. "Between 1905 and 1930, however," Dr. Conant points out in his junior-high study, "an irreversible social phenomenon took place, and by the end of this period over three-quarters of the pupils continued in grade 9." (By 1965, the proportion of students *completing* high school is close to 75 per cent.)

The social forces that invalidated a major argument for the junior high and swelled enrollments beyond the eighth grade now made it imperative to provide additional structures to contain the bulge. If history pulled the original *raison d'être* out from under the junior high, auxiliary reasons gained in importance. By 1920 the institution was equipped with a refurbished rationale in keeping with the times, stressing the role of the junior high in affording a transition to high school from the familiar one teacher, one room of elementary school. It stressed as well the importance of guidance and of providing an environment appropriate for the chaotic pre-teen and early teen years.

All too often, however, the junior high took on the rigid departmentalization and extracurricular fanfare associated with high school—including excessive emphasis on interscholastic athletics, elaborate graduation ceremonies, social events, and—Dr. Conant's *bête noire*—the marching band. This development in particular has provoked growing criticism of the institution in recent years, much of it self-criticism.

It appears to be the rare teacher who feels a commitment to teach in junior high. Professor Johnson cites a recent Cornell study showing that "among some 600 teachers who were surveyed, those teaching grades seven and eight were markedly less satisfied with their level of assignment than were teachers in the grades below and above."[6] An analysis of the reasons given indicated that "the nature of the curriculum (the ideas), rather than the nature of the pupils at this level, seemed to be predominant." There is, of course, no guarantee that the new kind of middle school will find it easier to attract and hold good teachers than the traditional junior high. There is, however, reason to hope for progress in this direction, to the extent that the new schools redress curriculum, diversify their programs, and offer stimulating opportunities to teachers and students alike. The Cornell study suggests some support for this hope, with its emphasis on "ideas."

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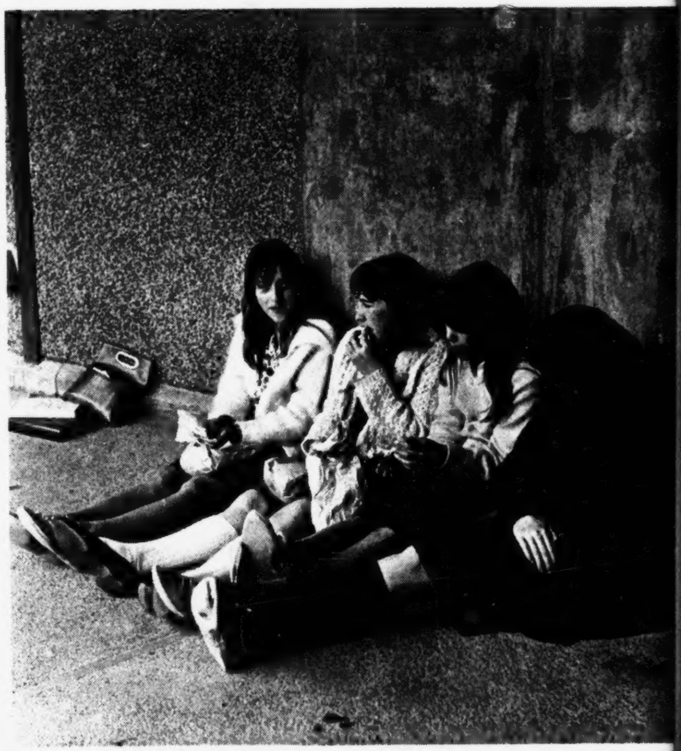
[6] "School in the Middle," *Saturday Review*, July 21, 1962, pp. 40-43, 56-57.



Children grow up faster today than they did a generation ago. They are physically bigger, and, in ways past measuring but plainly so, they acquire sophistication and wide-ranging knowledge at an earlier age. (*Time Magazine* credits a Connecticut high-school teacher with this aphorism: "If Booth Tarkington were to write *Seventeen* today, he'd have to call it *Twelve*.") At the same time, academic upgrading elsewhere in the school system is pressing on the intermediate grades. Youngsters come to the seventh grade, for instance, primed by the new math for more advanced work than many standard junior highs offer. In Saginaw, Mich., an added reason for the return to the original philosophy and program of the middle school is, staff members say, pressure from the grade 1-4 "feeder" schools, all of them experimenting with new ways of teaching and all of them becoming gradually nongraded.

New developments challenge the schools at every level, of course, and not just the junior-high years. But for many reasons, some already touched on, they seem to present a particular challenge to this educational backwater, opening vistas of schools for the in-between child that may realize many of the excellent original purposes of the old junior high, along with new purposes to meet new needs and findings.

In general, the proponents of the middle school envisage a school adapted to a range of children who, rampant individualists though they are, seem to have more in common with each other than with elementary-school children as a group, or high-schoolers as a group. The school would assume that, in general, its population had some mastery of the tools of learning but was not ready for the academic specialization of high school (and its attendant college-preparation pressures). The school could concentrate, then, on provisions for individual differences, so long touted, so little effected by American education, taking particular account of the increased sophistication and knowledge of today's 10-or 11- to 14-year-olds over previous generations.

As will be seen in the second part of this report, the design of the new middle schools facilitates a program that introduces fifth or sixth graders gradually to specialization, and provides all kinds of physical means to realize individual differences, on one hand, and to encourage group activities large and small on the other. The schools that enroll fifth or sixth graders usually assign them to their own classrooms for at least a share of the time. Specialization is apt to begin with subjects like art, music, and shop. All of the schools described have provided generously for these nonacademic specialities to an extent rarely, if at all, possible in elementary schools.

The free-ranging resource core of Amory Middle School is a good example of such special facilities. It also illustrates the attention the best of the new designs place on *action* (which, the reader will recall, looms important in Robert Davis's diagnosis of the needs of children in the junior-high years). In the Amory resource area, as at Barrington and most of the other schools, one activity area flows into another, children are urged to use them all, and often the science rooms are close by, to make it easy to use shop or art equipment for science projects.

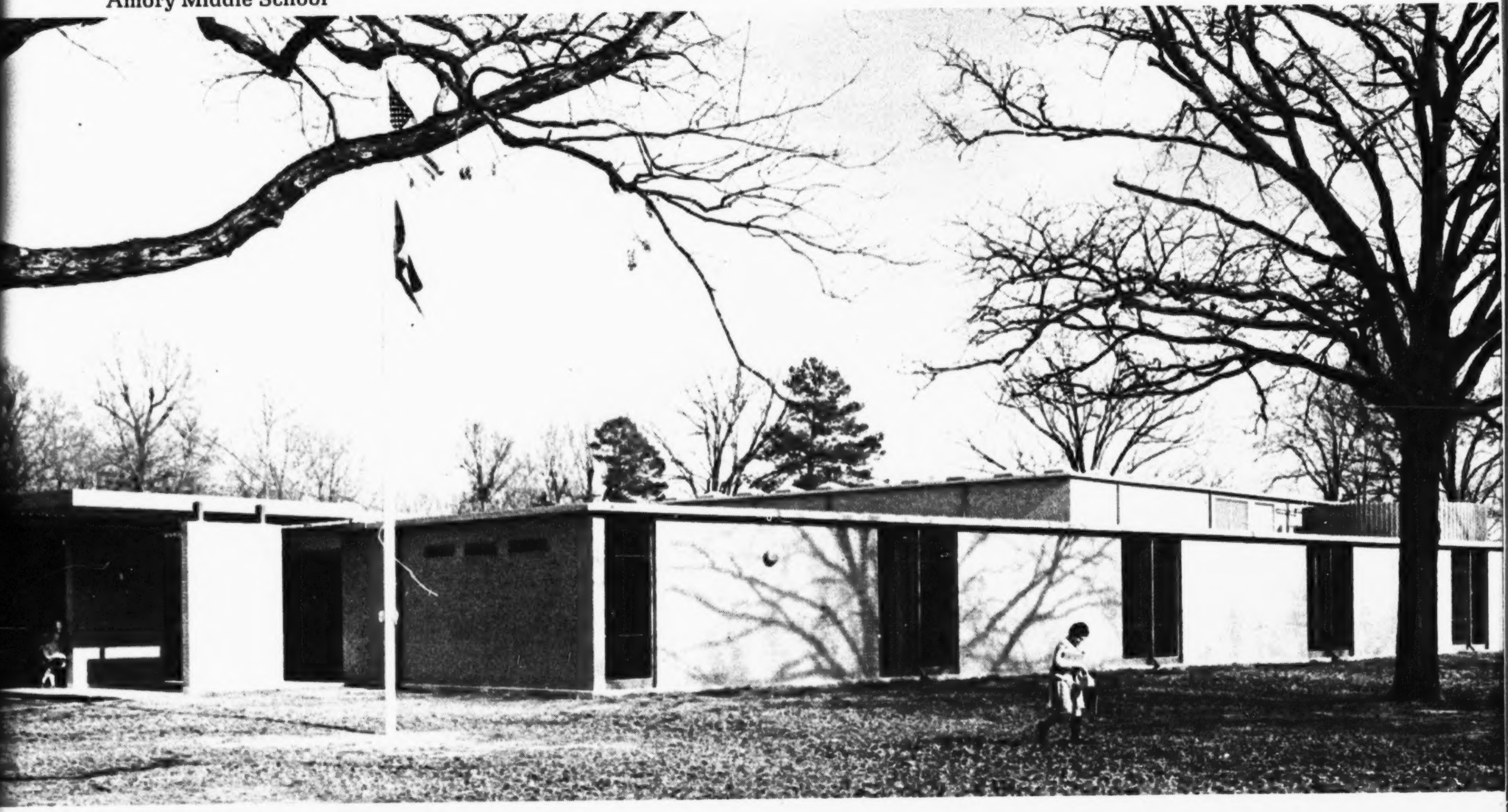
All of the schools described in Parts II and III allot special facilities to science, acknowledging the enhanced importance of science and of scientific aptitude in younger children. Most of the schools include language laboratories. In every school, the library occupies a central position in the design and in curriculum. Usually it is augmented by many other instructional tools besides books, comprising an extensive "resource center," or expandable into one. Underlying the accessibility of books and other tools of learning is a new emphasis on independent study. The Bedford Middle School perhaps goes furthest in providing physical facilities to this end, with its many individual carrels and its plan for progressive increase of time spent by the student on his own. All the schools reported include some assortment of smaller-than-classroom spaces where youngsters can work on their own or with a few others. Most of the schools have teachers' offices, or space readily convertible to such in the future.

Most of the sizable schools profiled have taken pains to mitigate bigness by one device or another, in deference to their young inhabitants. Generally the schools are designed to some variation of the house plan —Bedford, Giano, and Mattlin, for instance, with separate houses; Barrington and Kennedy in a compact layout with separate wings—acting to give youngsters a sense of identity and administrators a sense of knowing them as individuals.

Courtyards, both open and enclosed, act in many of the middle-school designs to increase the noninstitutional atmosphere as well as to provide space for a wide range of activities, from solitary study and theatricals to just plain sitting. Cafeterias serve a variety of purposes before and after lunch, and are designed to counteract the rushed, smelly, unappealing stereotype of the school lunchroom. Many of the schools are introducing air conditioning into their districts, and some of them, carpeting. All have provided variously for the future. By demountable walls and other means, they are planned to change if necessary, either to more conventional programs or in the opposite direction.

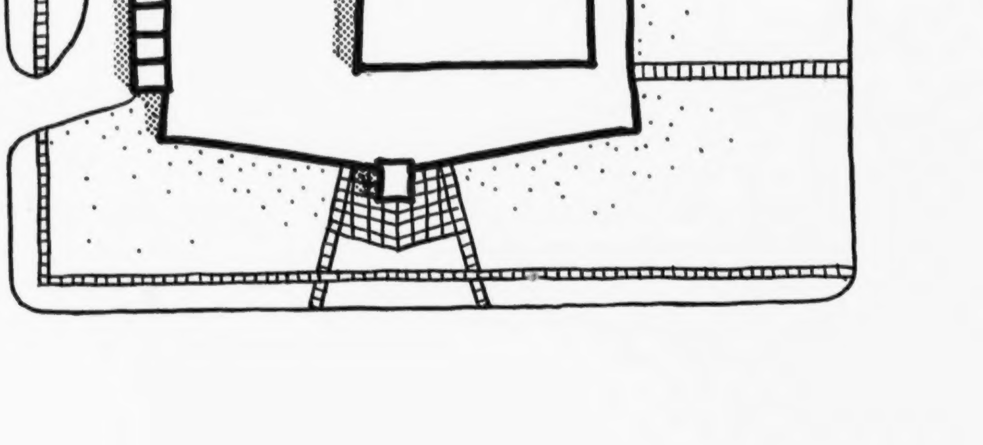
Research may never catch up with the complex nature of this odd student for whom the middle school is designed. Among many moot questions are these: Are fifth graders better off in an elementary school or with their elders? Are ninth graders better grouped with high-school students or below? What are the best ages to group together between elementary and high school? And there is a host of other unresolved questions. All of which underscores not only the necessity but the virtue of keeping prescriptions for the middle school fluid and eclectic, and of hedging middle-school design against the unknown and perhaps unknowable. As the ensuing profiles indicate, most middle schools are born adventitiously, for reasons primarily economic or social or even political. While it is possible to devise a detailed and convincing rationale for the middle school on purely educational grounds, any such formula lays itself open to the charge of being *ex post facto* and, more to the point, inflexible and unrealistic. The middle school can proceed best without generating a new orthodoxy.

PART II



Amory Middle School, with its clean, simple lines, fits happily into its setting—a seven-acre, well-shaded plot in one of the older residential sections of town. Rededication of a bisecting street provides ample outdoor play space. Below, left, paved terraces open off the multipurpose rooms on either side of the building; art classes are sometimes held here.

SITE PLAN



The Middle South's Only Middle School

The citizens of Amory are almost as astonished to have a genuine middle school in their midst as the outsider is to find it there. Now in its second year of operation, the school has quickly become the No. 1 tourist attraction of the town. Residents frequently call Principal Holace Morris up weekends or evenings and ask him to please "open up the school" so that they can show it to visiting relatives. The Middle School is a matter of pride even to busy Amory executives with no school-age children ("is it true that there are only three other middle schools in the United States").

The Amory Chamber of Commerce merely claims that it is "the only middle school in the Middle South." The little town (pop., 6,500) is in the northeastern part of the State, not far south of Faulkner country. Founded toward the end of the nineteenth century as a railroad town, Amory is now a thriving center of the "pants business" with four sizable factories within town limits (in Amory even the entrepreneurs and their wives forego the euphemism "trousers").

Until a few years ago, the school system comprised a six-year junior-senior high school, a six-year elementary school in town and one out in the country, plus the inevitable separate and complete colored school system. In 1960, with all schools overcrowded, Amory's Superintendent of Schools C. E. ("Ed") Hayman and his board took a long, thoughtful look at the problem of a new school or school addition. Without having formulated a specific plan for a middle school as such, Mr. Hayman nonetheless was seeking a fresh solution to the old problems and to new ones he could see coming. He was open to new ideas, and so was his school board.

The Amory people interviewed many architects before they chose Tom Biggs, of Jackson, who does not specialize in school design and who had never worked in Amory before. The choice was a happy one. Biggs, a serious and scholarly man who travels widely, grasped the opportunity the Amory requirements presented. With the help of educational consultants from New York and a small EFL grant, the Amory school people and their architect made a careful study of possible solutions. They visited middle schools, including the two in Saginaw, Mich., which impressed them very much. What first aroused their interest in building a middle school for grades 5-8 was the obvious economy of constructing a single school that would free space in the existing elementary school and high school by draining off two grades from each.

The ultimate architectural solution was hammered out over the better part of a year. Superintendent Hayman and his assistants were by no means sold on team teaching, nongraded programs, or many of the new techniques and instructional technologies they were hearing so much about. Nonetheless they wanted a building that would accommodate them —if and when. And as they probed the possibilities that a middle school offered, they became more and more convinced of its social, academic, and psychological advantages. With grades 7, 8, and 9 housed in the same building with the high school, Amory parents and teachers had become particularly distressed with the elaborate social and athletic doings in which the younger children were caught up. They hoped to ease this pressure by the new organization, and they wanted to provide the middle-schoolers with greater opportunities in science, shop, home economics, and the arts.

Tom Biggs's design took shape in classic fashion one day late in 1961, on a paper napkin at a Jackson cafe where he was lunching with Superintendent Hayman and consultant Frank Lopez. The plan, which all three came to more or less simultaneously, culminated months of frustrating attempts to translate the multiple educational purposes of the school into a cohesive physical whole.

Opened in the fall of 1963, when it was still not quite finished,

At the heart of Amory's design and program is the school resource center surrounding a skylighted court. The library, above, occupies a wide balcony in the court, brightened at both sides by large photo-murals of Mississippi farm and forest scenes. Staircases lead to main corridors and to airy space, with pools and greenery, serving as student lounge and display center with study carrels beneath balcony, left. Below, right, one of two rooms for science . . . handy to the art and shop areas.

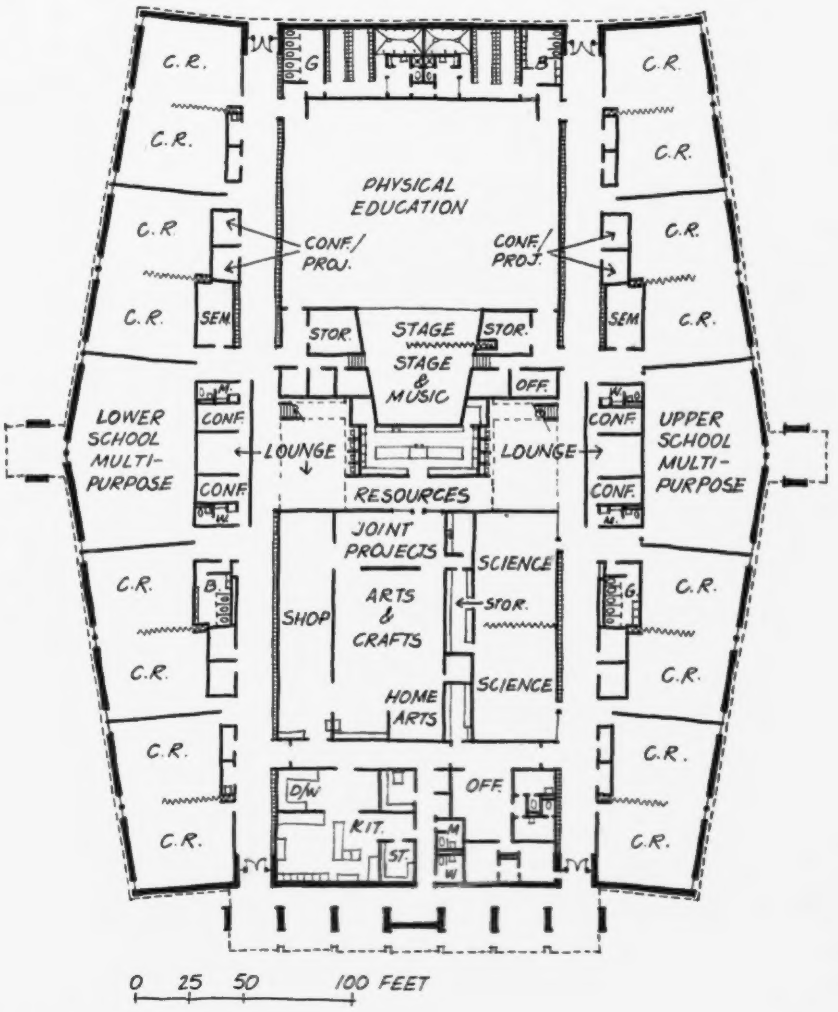
Amory Middle School

(Continued)

Amory Middle School is a warm, bustling, lively place, with an enthusiastic staff and many innovations new to the children and new to the town. The school is laid out in an irregular hexagon. Running the length of the building on each side are eight classrooms—on one side the "lower school," comprising grades 5 and 6, on the other the "upper school" for grades 7 and 8. Midway in each of the component schools is a large multipurpose room which serves, among other things, as a cafeteria. Between classrooms and corridor in each school are small enclosed spaces for small-group or individual activities. There is a teachers' suite in each "school," consisting of a small lounge and offices.

From the start, Amory Middle School was planned for year-round use. Air conditioning was a must. It represented, however, a sharp departure from Mississippi school-construction practice, and—along with such other unconventional elements as fixed windows and convertible spaces—caused considerable stir among the State's educators, mostly negative. It was attacked as "too expensive, too costly to operate, unnecessary, and impractical for school." The most serious reaction came from the Mississippi Educational Finance Commission whose regulations forbade participation in the cost of the building because of the innovations. The district had counted on about $200,000 from the State.

When the bids came in, the judgment of Amory's architects and school board was wholly vindicated. Total construction cost, air conditioning included, amounted to about $413,000, or less than $9.00 per square foot. As Tom Biggs says: "This example merely confirms experience in other regions: that savings can be effected through compactness and glass-area reduction to more than


C.R.
G
B
PHYSICAL EDUCATION
CONF./PROJ.
CONF./PROJ.
SEM
STOR.
STAGE
STAGE & MUSIC
STOR.
OFF.
LOWER SCHOOL MULTI-PURPOSE
CONF.
LOUNGE
RESOURCES
LOUNGE
CONF.
UPPER SCHOOL MULTI-PURPOSE
JOINT PROJECTS
SCIENCE
ARTS & CRAFTS
SHOP
STOR.
SCIENCE
HOME ARTS
D/W
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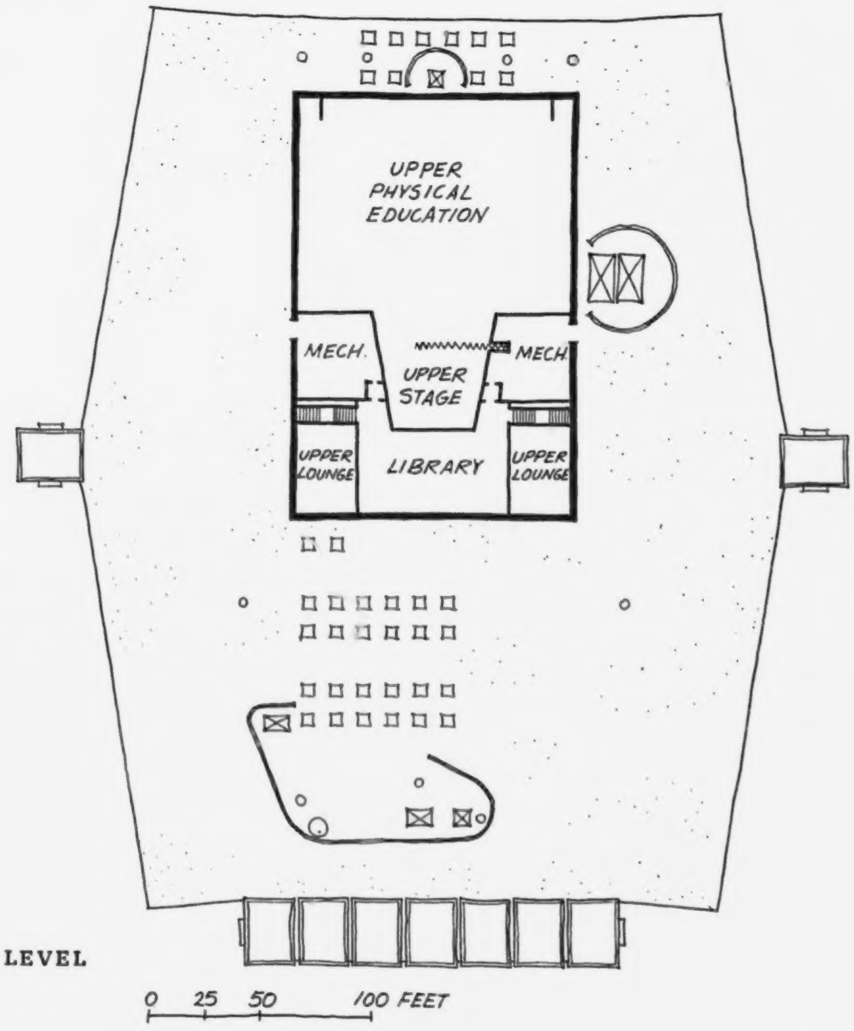
0 25 50 100 FEET

LOWER LEVEL


UPPER PHYSICAL EDUCATION
MECH.
UPPER STAGE
MECH.
UPPER LOUNGE
LIBRARY
UPPER LOUNGE
0 25 50 100 FEET

UPPER LEVEL

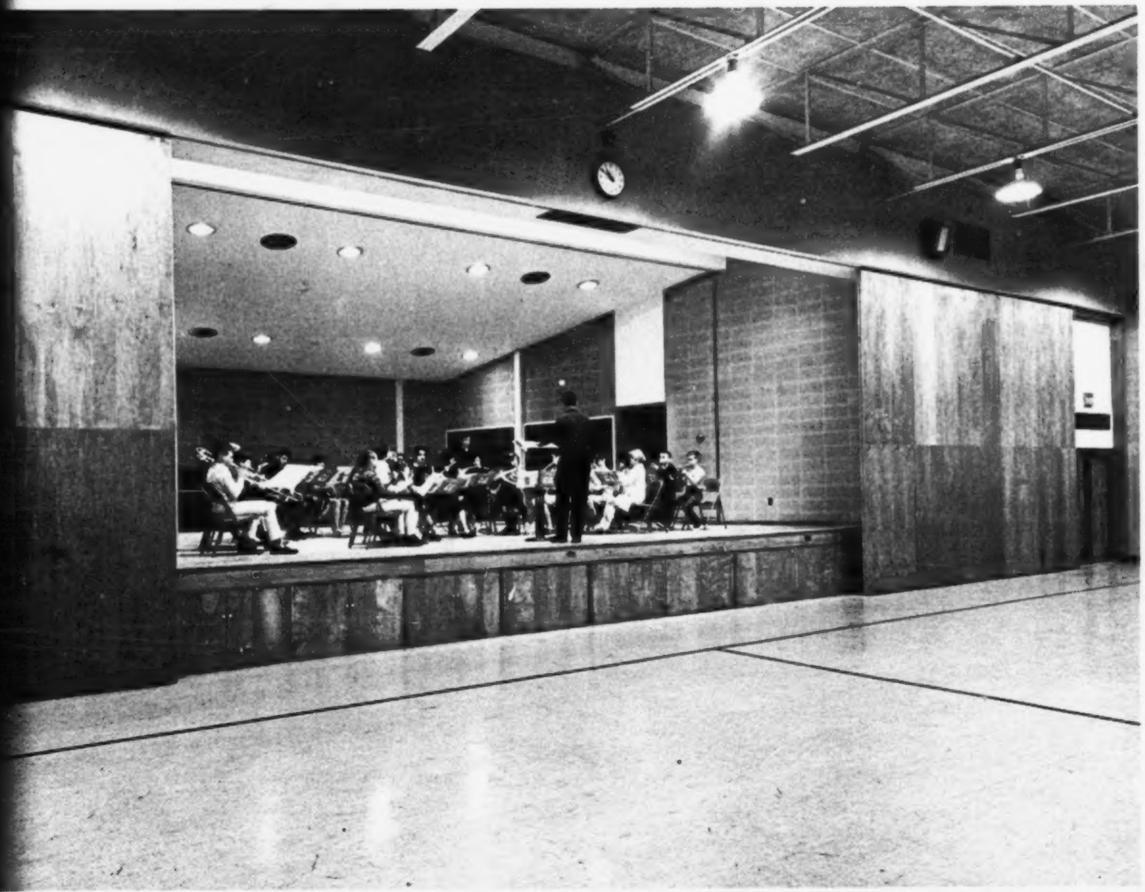
Amory Middle School
(Continued)

pay for the summer cooling cycle and gain substantial functional advantage as well."

The air-conditioning controversy produced a happy postscript, though too late to benefit Amory. In August, 1962, several months after Amory had awarded construction contracts for the middle school, the Educational Finance Commission issued a "Statement of Policy for Climate Control in School Buildings" which, in effect, reversed its position. The State would henceforth contribute to the construction of air-conditioned school buildings. Several are now being built in Mississippi.

The classroom arrangement at Amory is fairly conventional. Each pair of rooms, to be sure, can be thrown into one by opening operable walls, as occasionally is done. But with team teaching not much advanced beyond informal planning among teachers, the middle school is still essentially committed to self-contained classrooms for grades 5 and 6, and more-or-less conventional departmentalization for 7 and 8. What chiefly distinguishes the school is the diverse and imaginative use to which the wide central space between upper and lower schools has been put. This resource center embraces the gymnasium-auditorium plus music rooms at one end and at the other a fine, large, open area staked out for art, shop, and home economics, with two well-equipped science rooms closely related.

At the very center of the school, where the building rises to two stories, is a skylighted interior court equipped with large philodendrons, noninstitutional furniture, and simple fountains (the district maintenance man mutters "All that luxury!" but plainly shares the local pride in this unlikely school scene, and as a taxpayer, knows that even with year-



The Amory resource center was conceived to include the whole core of the school, from the gym-auditorium at one end to the open areas for art, shop, home arts, and science at the other. The middle school provides a lively program of athletics and physical activities for all its youngsters, without the interscholastic hoop-la of the old junior-high program. The auditorium stage, above, can be divided into two good-sized rooms for music classes and for other purposes. Practice rooms flank the stage, and locker rooms are placed at the far end of the auditorium.

round air conditioning, the school costs no more than a conventional one). A wide balcony above the court houses the library.

Amory Middle School to date is far from exemplifying all the educational innovations envisaged by the consultants' report that influenced its design. Not much is being done yet toward team teaching, nor have there been strong efforts to extend nongradedness to subjects beyond reading (now nongraded in the lower school). In Superintendent Hayman's words: "We hope that we are carefully evaluating staff and building capabilities, and that from study, experience, and experimentation will evolve a program that is best suited for us." Amory Middle School has already introduced such innovations for these age groups as a full-time art teacher (remarkably original products of her pupils adorn the resource center), a real physical-education program without interscholastic pressures, and opportunity for solid work in science, mathematics, and other subjects.

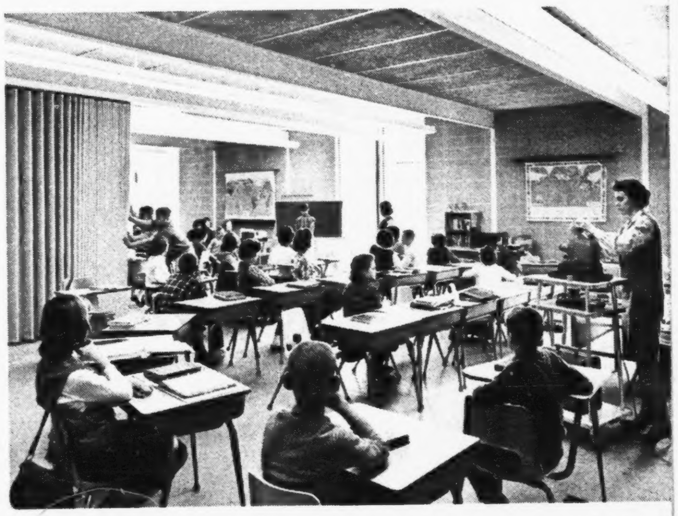
Professional guidance, which true middle-school proponents (and Amory's consultants) stress, the Amory people see less as a specialized, separate function than as an integral function of principal and teachers. Guidance on an "intimate and personal basis," to quote Mr. Hayman again, undoubtedly does go on in the warm atmosphere of this small school.

Everybody connected with the school is convinced that it is providing a superior educational environment for the children. No "measurable results" are available so soon, of course. And it is true that superintendent, staff, board members, when closely queried, agree that the most important, noticeable advantages marked thus far are in the social sphere: the seventh and eighth graders, separated from the baleful influence of the high-school mores, are more themselves, more "like children." Superintendent Hayman sums up the school's objective thus: "to advance the children academically and intellectually, and to slow them down socially." It is only fair to state that there is evidence, if necessarily inconclusive, that the middle school is working toward the first objective as well as the second (including the testimony of Amory High School teachers who now have last year's eighth graders in their classes).

Amory demonstrates perfectly one built-in by-product of any fresh organization like a middle school: the impetus and enthusiasm engendered by novelty *per se*. Fifth graders are enlivened by being out of elementary school; seventh graders by their advance to the upper school; eighth graders by being top dog; and so on. Everyone has been stirred up, to obvious advantages. The design of the Amory Middle School also demonstrates the virtues of the well-planned hedge—in this case, a relatively conservative school board and administration hedging against a radically different educational future.

AMORY
PRINTS

There is a fine, easy flow of open space in the art, shop, and home-arts area at Amory, reflecting and facilitating the instructional program, above. Classrooms may be still largely self-contained, but operable walls can turn each pair of classrooms into one, below.

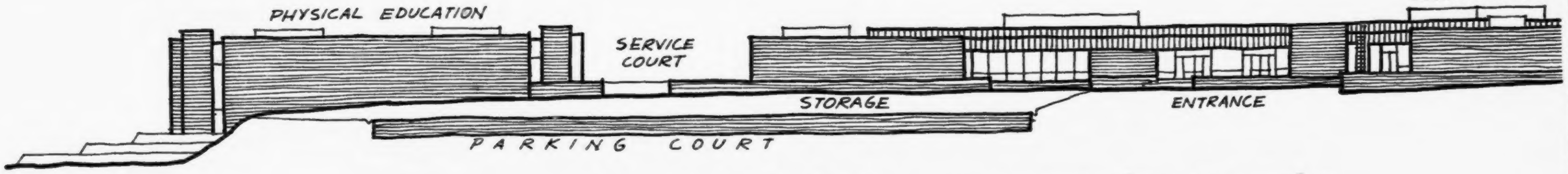


AMORY MIDDLE SCHOOL
Amory, Mississippi

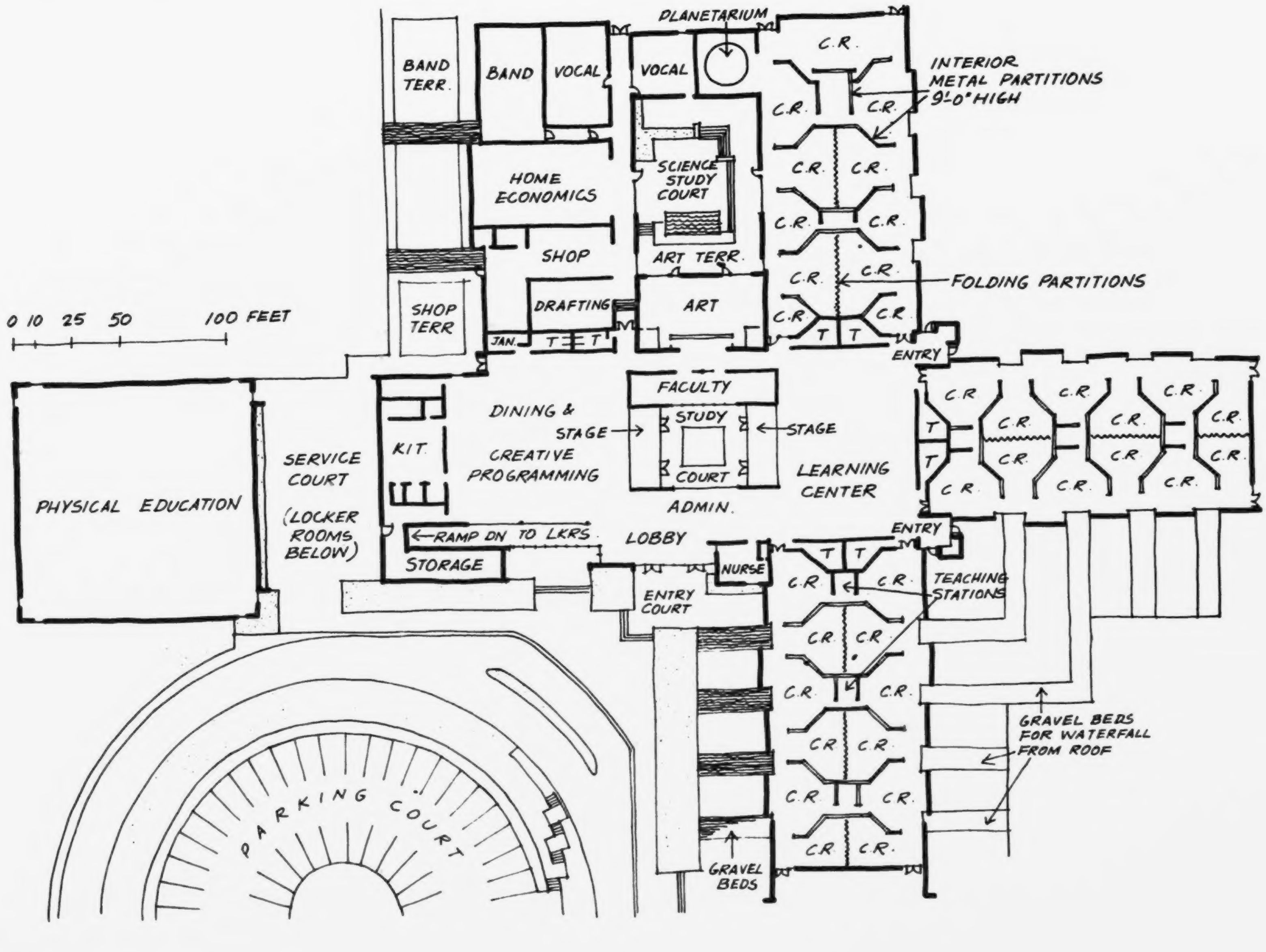
Size: 46,550 sq. ft.
Cost: $413,500
Cost per sq. ft.: $8.88
Cost per pupil: $689
Air Conditioned

Grades: 5-8
Opened: Fall, 1963
Capacity: 600
Present Enrollment: 436
Superintendent: C. E. Hayman
Principal: Holace Morris
Architects: Biggs, Weir, Neal & Chastain
Educational Consultants: Educational Research Services, Inc.
Frank Lopez, *Partner in Charge*

Barrington Middle School


PHYSICAL EDUCATION
SERVICE COURT
CLASSROOMS
STORAGE
ENTRANCE
PARKING COURT

Barrington Middle School, scheduled to open in September, 1965, makes ingenious use of its site to keep the big gymnasium in proportion, elevation, above. Parking court is also at lower grade. Floor plan, below, shows the general organization of this big school, with the "commons" at center for library, dining room, and administration, surrounded by three identical classroom wings and a fourth for special activities like shop and music. The design is meant to enhance a truly exploratory program. Youngsters will be given specific, but irregular, periods in which to pursue individual interests, including even sitting under a tree or perhaps auditing a class. The school will eventually be nongraded throughout.


PLANETARIUM
BAND TERR.
BAND
VOCAL
VOCAL
C.R.
INTERIOR METAL PARTITIONS 9'-0" HIGH
C.R.
C.R.
HOME ECONOMICS
SCIENCE STUDY COURT
C.R.
C.R.
C.R.
C.R.
SHOP
ART TERR.
C.R.
C.R.
FOLDING PARTITIONS
0 10 25 50 100 FEET
SHOP TERR.
DRAFTING
ART
C.R.
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C.R.
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T
T
KIT.
SERVICE COURT
CREATIVE PROGRAMMING
COURT
LEARNING CENTER
C.R.
C.R.
C.R.
C.R.
PHYSICAL EDUCATION
(LOCKER ROOMS BELOW)
ADMIN.
RAMP DN TO LKRS.
LOBBY
ENTRY
STORAGE
NURSE
T
T
C.R.
C.R.
TEACHING STATIONS
ENTRY COURT
C.R.
C.R.
C.R.
C.R.
GRAVEL BEDS FOR WATERFALL FROM ROOF
C.R.
C.R.
PARKING COURT
C.R.
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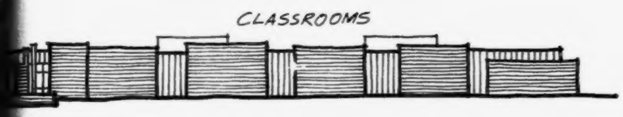
C.R.
C.R.
GRAVEL BEDS

A Meeting of Architectural and Educational Minds



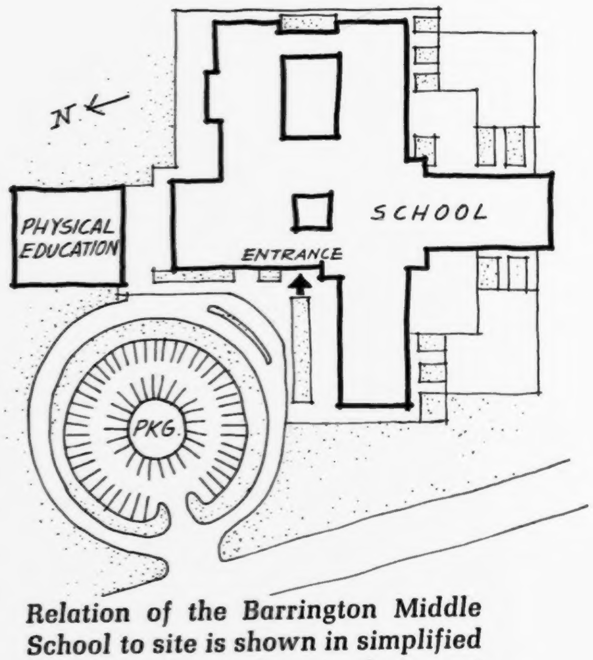
Robert Finley, of Barrington, Ill., may well be the only school superintendent in the United States whose educational philosophy takes off from these two principles: 1) a really first-rate schoolhouse would have no interior partitions whatsoever; and 2) a really first-rate school system would be totally nongraded. These views are no mere matter of platform forensics, but are deeply felt and will be closely argued if you give the superintendent half an opening. Dr. Finley came to Barrington in 1961 after putting the Cleveland suburb of Chagrin Falls on the educational map, notably for an elementary school that makes signal use of open space and free-wheeling instructional patterns.[1]

Barrington is an exurb in rolling countryside northwest of Chicago, with a predominantly middle- to upper-middle-class population. Like many other states, Illinois has a complex system of school districts, and a considerable nonmatch between district lines and town or village lines. Barrington comprises two school districts with separate school boards, one covering the high school, the other covering four elementary schools. In addition, a separately administered elementary-school district sends its children to Barrington High. Dr. Finley is superintendent for the two districts that include the high school and four elementary schools. This oversimplified account illustrates still another adventitious factor in the development of the middle school; the peculiarities of state education law. Faced with a bursting high school and with the oldest elementary school condemned for post-1965 use by State authorities, Superintendent Finley and his school boards first opted for construction of a 7-8-9 school—or, on paper at least, a conventional junior high which would have required the approval of all three school districts—in short, a unification. For a variety of reasons, the proposal was voted down. The alternative, a 6-8 school, was later approved by the voters in the Barrington elementary-school district.

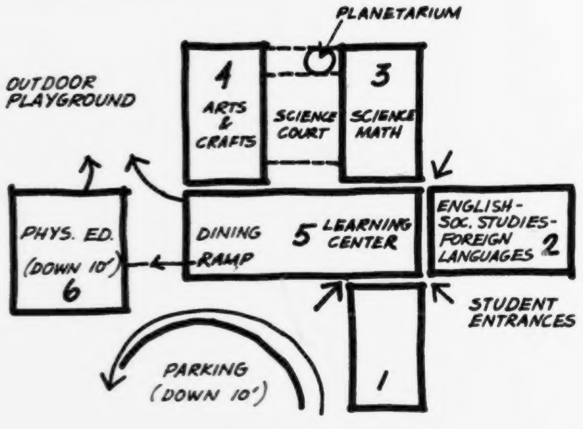
True to character, Dr. Finley flouts the true believers in the 4-4-4 system just as he discounts the doctrine of any organizational system *per se*. Much of what he and his staff fiercely extoll and put into practice they feel is appropriate and desirable for students at every stage, K through 12—teaching by teams, imaginative guidance practices, nongradedness, well-staged and ever increasing opportunities for students to work and explore on their own, a fine balance of freedom and intellectual rigor. But, once reassured that he is not being asked to proselytize for a new unorthodox orthodoxy, he readily concedes the virtues of housing in-between-aged children in their own school.

As he and his carefully chosen staff see it, these children need and can profit by a program that will provide a true transition from the self-contained elementary classroom to the full departmentalization of high school; that will take account of the increased maturity of these children today and of the downward thrust of advanced curriculum content as the high schools get tougher academically. Combining grades 6, 7, and 8 gives imaginative administrators and teachers a chance to give preadolescents a taste of true exploration removed from the dominating ninth-graders and the omnipresent college/career pressures of high school.

Even this much concession to grades and organization comes hard to Dr. Finley. To him even "K-12" suggests undue and artificial constraint. Better "birth-death," he likes to say, if you want a sensible educational span—and all of it nongraded. Insisting to the end that all educational organization is basically designed for "administrative convenience," he will concede that,



Relation of the Barrington Middle School to site is shown in simplified site plan, above. A general concept of school was first presented to the school board, below.



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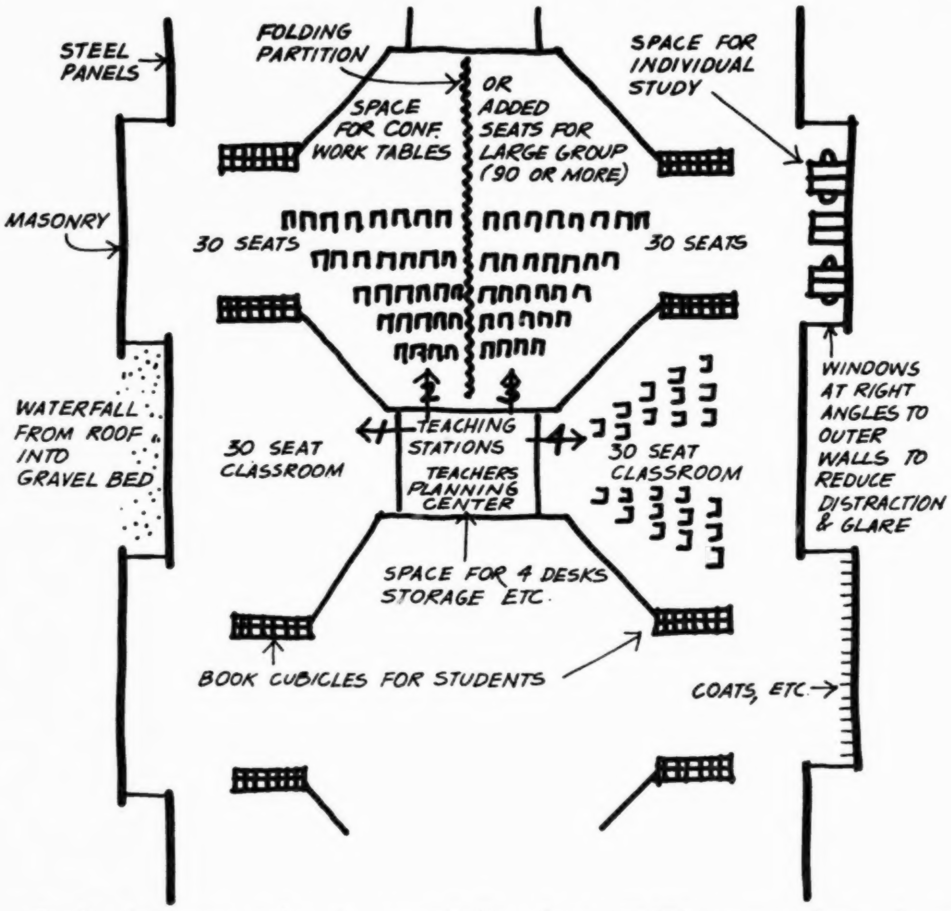
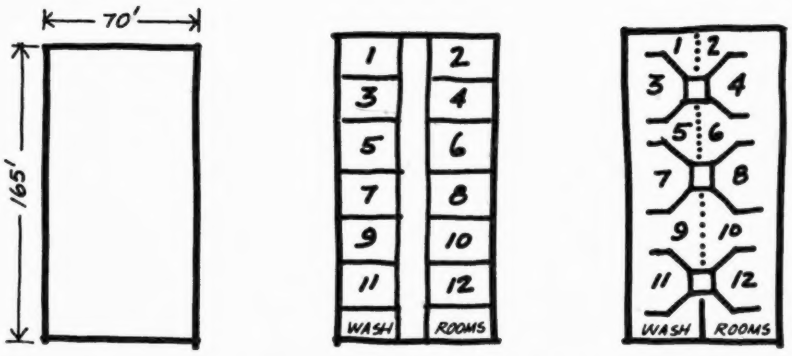
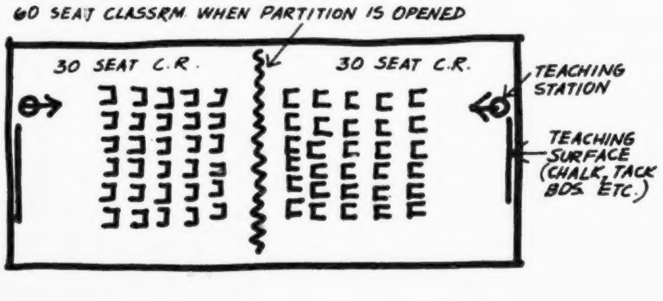
[1] See forthcoming EFL Report: *Schools Without Walls.*


STEEL PANELS
FOLDING PARTITION
SPACE FOR INDIVIDUAL STUDY
SPACE FOR CONF WORK TABLES
OR ADDED SEATS FOR LARGE GROUP (90 OR MORE)
MASONRY
30 SEATS
30 SEATS
WATERFALL FROM ROOF INTO GRAVEL BED
30 SEAT CLASSROOM
TEACHING STATIONS
TEACHERS PLANNING CENTER
30 SEAT CLASSROOM
WINDOWS AT RIGHT ANGLES TO OUTER WALLS TO REDUCE DISTRACTION & GLARE
SPACE FOR 4 DESKS STORAGE ETC.
BOOK CUBICLES FOR STUDENTS
COATS, ETC.

Each classroom wing is essentially about 12,000 square feet of unobstructed space. Present plans call for disposing demountable walls to shape classrooms as in the diagram above. This shows a four-classroom unit which is designed to provide optimum seeing and hearing from all quarters.


70'
165'
1
2
3
4
5
6
7
8
9
10
11
12
WASH
ROOMS
1
2
3
4
5
6
7
8
9
10
11
12
WASH
ROOMS

The three rectangles, above, diagram the flexibility of a typical Barrington wing. At left is the basic area, with no fixed interior partitions. The diagram, at right, shows partitions arranged for 12 classrooms. Solid lines represent demountable walls, dotted lines, folding partitions that can produce double classrooms within minutes. Squares in this diagram represent teachers' planning centers, essential to the team teaching which will prevail in the middle school. The central diagram shows a Barrington wing rearranged to accommodate a conventional program of instruction: 12 standard classrooms opening off a double-loaded corridor. Below, the sketch shows, in contrast to the Barrington plan, the relative inadaptability of standard classroom arrangements to team teaching. With the two rooms thrown into one, seats and desks must be rearranged, since teaching stations will inevitably occupy the far ends of the rooms. Also, distances prohibit good viewing and hearing for many students. No planning space is provided.


60 SEAT CLASSRM WHEN PARTITION IS OPENED
30 SEAT C.R.
30 SEAT C.R.
TEACHING STATION
TEACHING SURFACE (CHALK, TACK BDS. ETC.)

Barrington Middle School
(Continued)

the world being as it is, you have to "get kids into teachable groups, within some manageable range of achievement." In his view, almost any combination is workable after the primary years, when he feels the child needs the security of his own teacher and classroom while learning the basic skills.

For all Dr. Finley's disavowal of middle-school orthodoxy, he and his assistants have worked out in detail a very special program for the Barrington school. Only teachers committed to team teaching and experiment of all kinds will staff it ("the job of administration is to create an atmosphere that permits mistakes; if the staff isn't making mistakes, they're not trying"). Many of them are new, others have proved themselves in other Barrington schools. There will be a principal who really likes to *administer*, flanked by a director of pupil personnel, and a director of instruction who hates paperwork and loves teaching. Assistant Superintendents Fred Dippel and Tom Hasenpflug have been intimately involved for close to a year in all phases of program planning. Mr. Dippel constructed an extraordinary chart covering a year's pre-opening activities that parallels the architect's construction-phase chart.

Architecturally, the school promises considerable excitement. In essence, it consists of four similar wings leading out from a larger central core that contains a multipurpose dining area and a large open learning center (the library, plus). Each wing will be 11,750 square feet of carpeted, air-conditioned, unobstructed space with no bearing walls and no columns within the academic area. Adjacent to the main building but at a lower level, is the gymnasium—massive when viewed from the playing field, but keeping its place when viewed from the school itself.

The schematic drawings on page 26 show the adaptability of the space and the present plans for its use. They were sketched by Spencer Cone, the senior architect in charge of the project, who is wholly caught up in the Barrington ferment. It would appear that this project produced an unusual peak of architect-client collaboration (Finley speaking: "Spence *really* listens; most of the others pretend to listen and then do what they intended to do in the first place").

When the school opens (if all goes well) in September of 1965, it will be the first complete school building in the country constructed with the SCSD system of modular components.[2] The School Construction Systems Development project, financed by EFL, has developed a school-building system for 13 school districts in California. These 13 districts will shortly be constructing 22 projects using the SCSD system. The components include the structural and roofing system, an air-conditioning system (the entire unit is housed on the roof and makes a boiler room unnecessary), a ceiling-lighting system, and three kinds of interior partitions: demountable, accordion-operable, and folding-operable. With no fixed interior walls or structural columns within instructional areas, the school comes about as close as reality can to Superintendent Finley's ideal. In early 1965, with the footings just poured, it was far too soon to judge the efficacy of the system. But everything pointed (including the bids as revised) to a highly flexible, economical, and speedily constructed building.

A few highlights of program and design are in order here, most of them illuminating the remarkable confluence of design with program. There are no standard double-loaded corridors (though, as the scheme shows, they can readily be created in each classroom wing if a future administration so ordains—what Dr. Finley calls the "built-in second guess"). Instead (and thereby saving money), the "corridors" around the perimeter of each wing double as additional classroom space. Traffic lanes will be marked by luminous panels on the ceiling adjacent to the standard coffered lighting, and by carpet of different colors. To reduce glare and distraction, windows are set at right angles to outer walls; the recesses thus created afford, on the inside, space for individual study and for coat racks, and, on the outside, when it rains, a waterfall from the roof into beds of gravel (a rather Japanese experiment that eliminated the expense of down spouts and is expected to add exterior interest).

The learning center will be enormous—7,000 square feet in contrast to the familiar double-classroom library (1,800 square feet). All students must pass through it en route from any classroom wing to dining room or gym or arts-and-crafts wing. The nonexistent "corridor" they traverse may be marked by low book shelves on the inner side. Dr. Finley proposes to check no books out and no books in. There will be no check-out desk, no workroom, perhaps no librarian as such, but rather a clerk plus a teacher "who knows kids." (Chagrin Falls, under Dr. Finley's superintendency, also dispensed with standard library procedure; after one year's experiment with authorized larceny, the school library counted 82 more volumes than they had had at the start.)

Finally, Robert Finley is very partial to that old research standby, the Hawthorne Effect.[3] He welcomes visitors, the more the better. He counts happily on the new middle school to attract them, and on novelty and attention combined to stir his staff up to splendid purpose. "I like teachers to get so big-headed they do a terrific job," he says.

BARRINGTON
MIDDLE SCHOOL
Barrington, Illinois

Size: 95,100 sq. ft.
Cost: $1,244,000
Cost per sq. ft.: $13.08
Cost per pupil: $1,037
Air Conditioned

Grades: 6-8
To Open: Fall, 1965
Capacity: 1,200 (850 to start)
Superintendent: Robert Finley
Assistant Superintendents: Fred H. Dippel
Tom Hasenpflug
Principal: Walter Pagels
Architects: Cone & Dornbusch
Spencer B. Cone,
Partner in Charge

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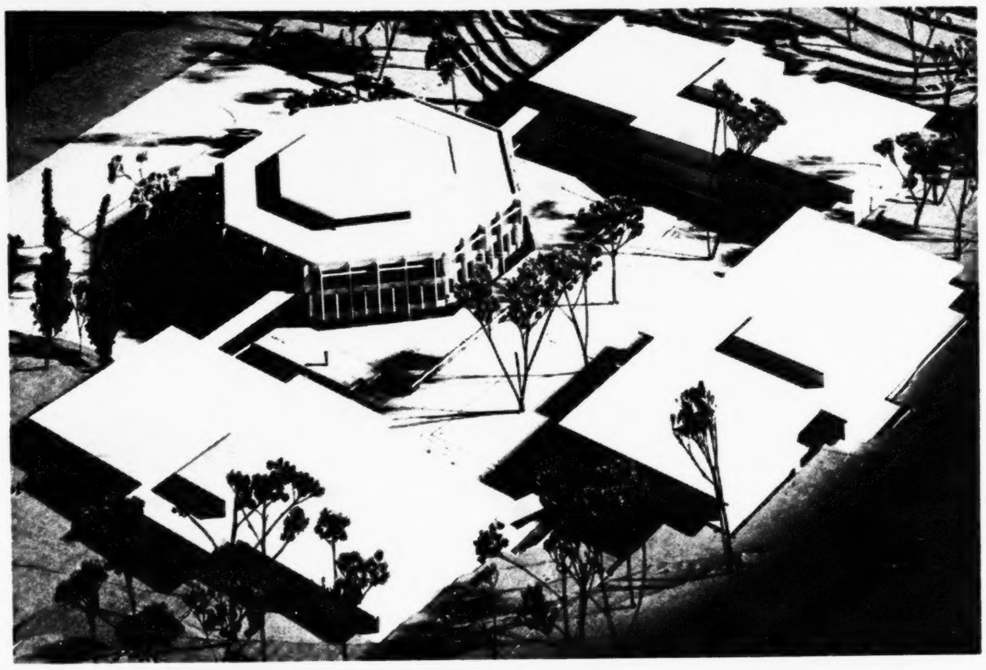
[2] *SCSD: An Interim Report* (New York, Educational Facilities Laboratories, Inc., 1965).

[3] The psychological "lift" which many people get merely from being involved in a significant experiment.



Bedford Middle School

A Middle School Keyed To "A New Number: The Number One"

A good three years before construction began, imaginative plans for this middle school were afloat. Some were aired at an unusual two-day meeting convened in September, 1961.

This meeting, co-sponsored by the Bedford Public Schools and EFL, brought together an array of people deeply concerned with society and people and education. In a free-wheeling exchange of ideas, they concentrated on the kind of school that would truly meet the needs of pre-adolescent youngsters in the Bedford school district, and that would be adaptable to the unknown needs of the district's children decades hence.

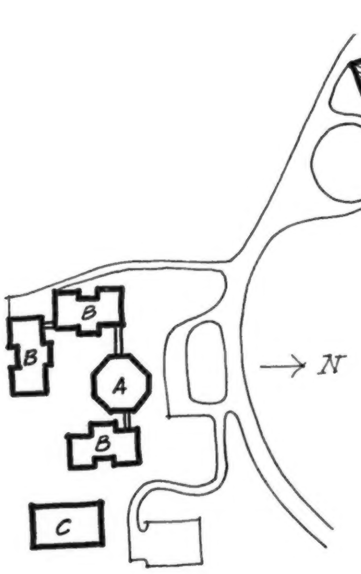
The Committee of Seventeen numbered 15 different disciplines among its members. It included administrators and a school-board member from Bedford; nationally known educators like Robert Anderson of Harvard and Lawrence Cremin of Teachers College, Columbia; architects and designers; and such notables as Harvard psychologist Jerome Bruner (whose influential *Process of Education* had just been published) and Jane Jacobs, maverick critic of cities and city-planners.

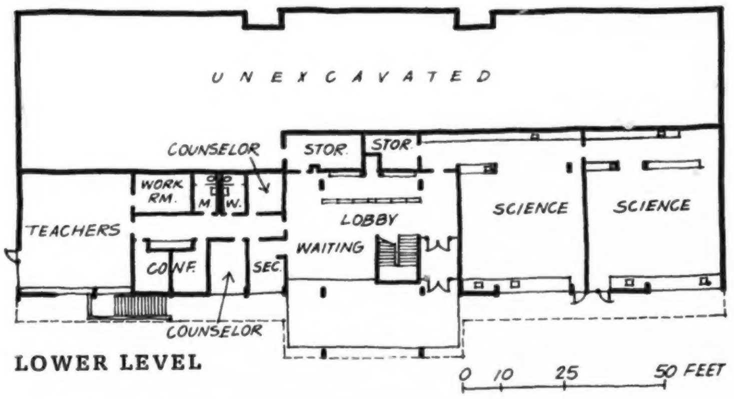
The conferees took off from the premise, presented in a report by a Bedford staff committee, that the district stood in need of a school program and building "suited to the peculiar requirements of children in the 'middle' of their public school life" and that flexibility was of paramount importance, calling for well-thought-out combinations of teaching and learning groups.

The September meeting was followed a month later by a meeting in which four of the original committee joined Bedford staff members to draw up more precise physical and programmatic specifications for the new school. From that point until construction began in the spring of 1964, men and money revised some of the original ideas. Only two of the 1961 board members are still in office. Some features which proved to be costly were dropped to assure passage of the bond issue. Difficulties with contractors have been slightly above par for the school-building course, though unrelated to the building's architectural or educational innovations. And the district now has a new superintendent. (Charles Richter, who sparked the middle school idea and the 1961 conferences, is now superintendent of schools in West Hartford, Conn.)

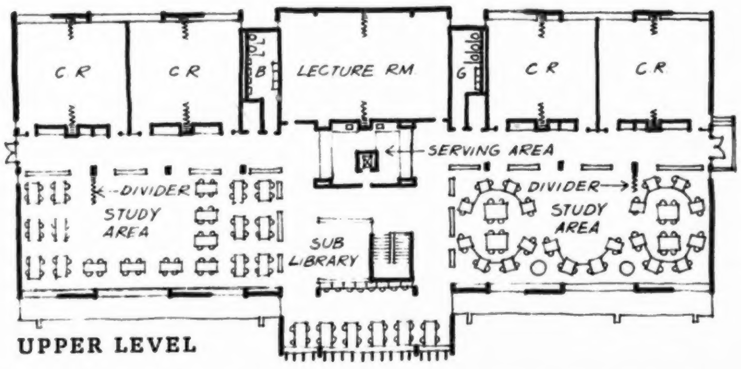
Change—a concept important in the planning—has thus overtaken the Bedford Middle School even before its completion. But the basic concept evolved by the Bedford people and their advisors prevails. The new school will be uniquely keyed to "each and every individual child—to the new number in education, the number one." Certain engaging features, along with the swimming pool, will be missing—notably the "acre of June," the year-round verdant area that might have replaced the standard gymnasium. But Bedford still promises to be a school distinctively designed for the intermediate child and unusually sensitive, in fittings and organization, to his manifest needs (e.g. for privacy *and* sociability) and his unknown potential. Among other unusual assets, the gymnasium will be extended by an outdoor area as big as the gym itself, roofed over, and usable very nearly all year. (The micro-climate study that proved the feasibility of this outdoor innovation was done by Texas A and M, with EFL support.)

The site plan shows the relationship of the middle school to the Fox Lane School, the district's high school, now overcrowded with grades 7 and 8. There will be some interchange between the two schools, and they will share certain facilities (including auditorium, playground, and kitchen). As the plan indicates, the new school is laid out campus-style, with three academic "houses" clustered around an octagonal



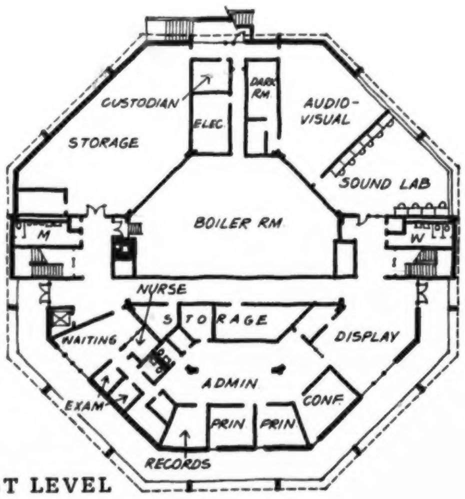

UNEXCAVATED
COUNSELOR
STOR
STOR
WORK RM.
M
W.
TEACHERS
CONF.
SEC
LOBBY
WAITING
SCIENCE
SCIENCE
COUNSELOR
0 10 25 50 FEET

LOWER LEVEL

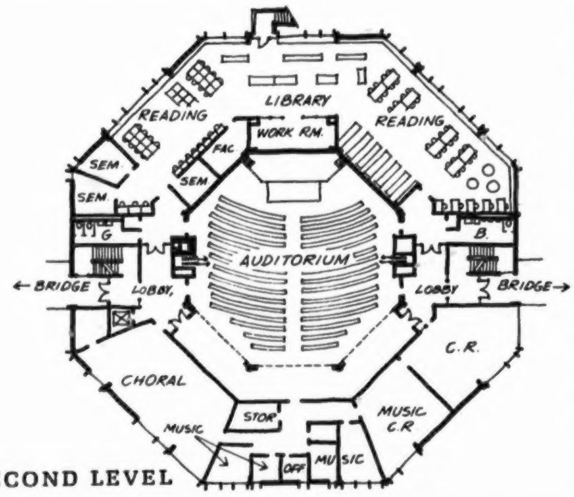

C R
C R
B
LECTURE RM
G
C R
C R
SERVING AREA
DIVIDER
STUDY AREA
SUB LIBRARY
DIVIDER
STUDY AREA

UPPER LEVEL

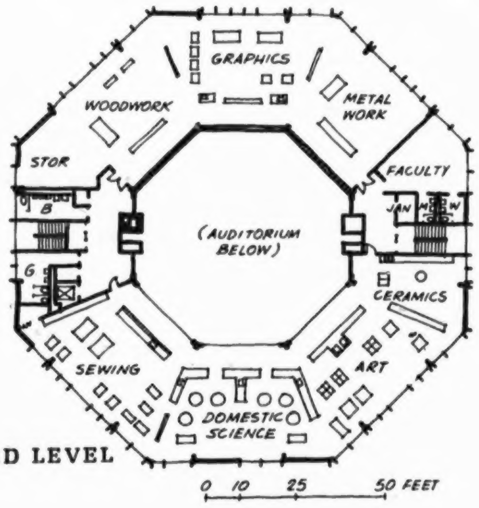
Bedford Middle School, in Mount Kisco, N. Y., shares its site with Fox Lane, the district's high school. Site plan, above left, shows relation of two schools. Campus-style middle school groups three academic houses (B) around a central octagonal arts building (A). Floor plans for each of the three levels of the arts building appear at left. Upper and lower floor plans of the typical academic house are shown above. Layout of the gymnasium—(C) on the site—is shown below, with its large outdoor sheltered area. A close reading of the floor plans reveals many distinctive features of the Bedford school. The auditorium, for instance, at the center of the arts building on the second level, is essentially a little theater seating 350. It can be divided in half by a double, soundproof folding partition. The raised platform is demountable and can be centered to create a theater-in-the-round. The school's unusual provision for individual study is indicated in the large, open library area adjoining the theater, and in the space each house gives to individual study areas. The audio-visual center in the lower floor of the arts building can eventually provide closed-circuit television for the middle school and for Fox Lane and connect selected individual carrels in the arts building and the houses to programed material in the sound laboratory.


CUSTODIAN
DARK RM.
ELEC.
AUDIO-VISUAL
STORAGE
SOUND LAB
BOILER RM.
M
W
NURSE
STORAGE
WAITING
DISPLAY
ADMIN.
EXAM
CONF.
PRIN
PRIN
RECORDS

FIRST LEVEL

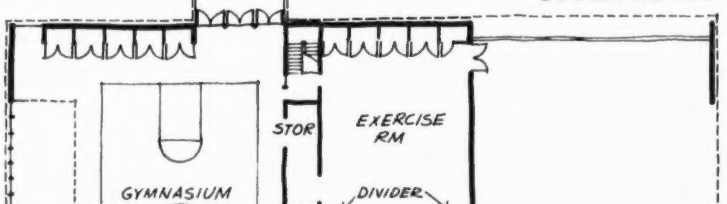

LIBRARY
READING
READING
WORK RM.
FAC
SEM
SEM
SEM
G
B.
AUDITORIUM
← BRIDGE
LOBBY
LOBBY
BRIDGE →
C.R.
CHORAL
STOR
MUSIC C.R.
MUSIC
OFF
MUSIC

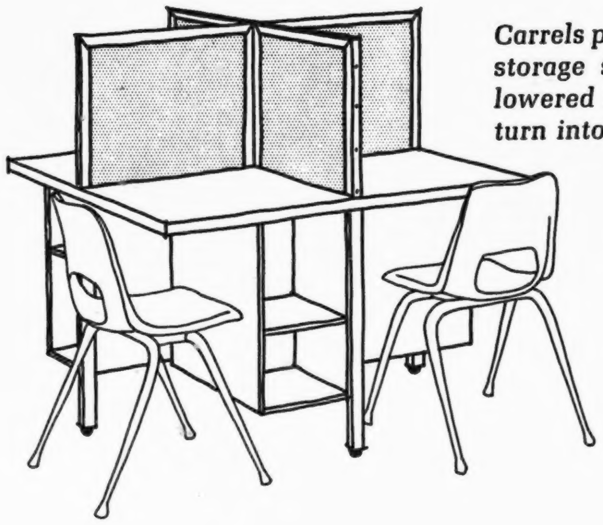
SECOND LEVEL


GRAPHICS
WOODWORK
METAL WORK
STOR
FACULTY
JAN
M
W
B
(AUDITORIUM BELOW)
G
CERAMICS
SEWING
ART
DOMESTIC SCIENCE
0 10 25 50 FEET

THIRD LEVEL

UPPER LEVEL


STOR
EXERCISE RM
GYMNASIUM
DIVIDER
SHELTER
STOR
FOLDING BLEACHERS
EXERCISE RM



Carrels provide individual study and storage space. With the partitions lowered into the desks, study areas turn into lunchrooms.

arts building. The houses are long rectangles, as is the gymnasium.

The three houses are identical except that one of them contains a two-story lecture room accessible from the lower floor, planned to accommodate a planetarium some day. There are 18 standard classrooms (including 6 science rooms) and 3 large-lecture rooms for an enrollment of over 1,100. Open areas on either side of each house library accommodate individual study-and-storage carrels, outward signs of the school's philosophy of placing confidence in these very young people "to carry out assignments over lengthening periods of time, to pursue new ideas and interests independently, and to maintain and utilize various resources and materials which relate to their classroom experiences." The new school, in reflecting this consensus of the Committee of Seventeen, will honor its confidence in the individual student by assigning him "a headquarters of his own . . . a headquarters for scholarship."

Actually, when the school opens, there will not be a carrel for every student, partly because of other demands on space, partly because of the feeling that all the children will not be ready for so much independence. Two-thirds of the students will have their own individual carrels. And to honor sociability (and also to conserve space), the study area is to be used for dining. The table surface of each group of four carrels will provide round-the-table dining. The children not yet assigned carrels of their own will be based in traditional home rooms, and join their fellows for lunch. In general, it is planned that most children will spend an increasing proportion of their time without teachers—working on assignments in the library and elsewhere, studying, working on projects.

The arts building, rising to three stories at the center of the school, was conceived as a busy studio. Of particular note is the little theater on the second level, the unencumbered library, and the open third floor devoted to the manual, graphic, visual, and home arts. Insofar as building codes permitted, this floor was designed as one continuous space.

The Bedford people hope that the house (or school-within-a-school) plan will scale the 1,050 student facility down to more manageable size—more important, to a size suited to the 10-to-14-year-olds who will spend their days there. As one of the participants at the 1961 conference said: "At least someone under this system would know whether the kid in the green sweater was one of ours or one of theirs." Each house will be the school in miniature, with all age groups represented, including possibly a few advanced fifth-graders and slow ninth-graders.

One of the architects taking part in the September, 1961, meeting said: "Instead of creating boxes for students and teachers, let's create a community." And Mrs. Jacobs added: "The school for now should be a commitment for now. But the structure has to be nurturing—a structure which permits change."

BEDFORD MIDDLE SCHOOL
Mt. Kisco, New York

Size: 137,690 sq. ft.
Cost: $3,070,775
Cost per sq. ft.: $22.30
Cost per pupil: $2,925

Grades: 6-8
To Open: Fall, 1966
Capacity: 1,050
Present Superintendent: Duane Ahlf
(Superintendent 1961-1964: Charles O. Richter)
Prinicipal: Neil P. Atkins
Bedford Middle School and
Fox Lane High School
Architects: The Architects Collaborative
Partners in Charge: John C. Harkness,
Herbert K. Gallagher,
Sarah Harkness

Figures are best available in July 1966, but not final because of pending litigation.

Notes From a Middle School Conference

For two days in September, 1961, seventeen people met together in Mount Kisco, N.Y., to discuss the middle-school concept.[1] While the conference, sponsored by the Bedford Public Schools and EFL, was prompted by the need to devise plans for a particular school, the deliberations of the participants ranged free and far, and have relevance to middle schools in general. Excerpts follow:

SCHOOL DESIGN

Larson: If a schoolhouse is going to be rearranged periodically inside and out, who does the rearranging? Certainly not the superintendent or the teachers. No, it would have to be an architect—and why not the same architect who designed the building originally?

The architect should play an entirely new role in relation to the schoolhouse. Instead of making a "one-shot deal" (the architect designs the building and forgets about it), the architect should serve more as the family doctor does. Maybe the architect should be put on a retainer and inspect the buildings regularly to recommend any physical changes and shifts of space needed to keep pace with changing educational programs.

How about a change in the way schools are financed? The standard system of one bond issue for construction and another X years later for remodeling or expansion is a costly and inefficient way to keep a building up-to-date and usable—even apart from the discomfort and bad education that result from squeezing oddly shaped programs into obsolete space. Better that the space should be in a state of continual growth and change. And this process should be reflected in the financing. Money should be included in the original issue to keep the building growing and changing as it should and to keep the architect retained on a permanent basis—or as long as the building and the architect both shall live.

* * *

Chapman: The school should have a place the kids feel belongs to them, where they can leave their books and projects, experiments, and other "glop," just as if they were at home.

* * *

Jacobs: The way to regiment is to duplicate. . . . Learning is a private—personal—thing....Sizes of rooms have to do with teaching not with learning.

* * *

Flansburgh: Instead of creating boxes for students, create a community.

* * *

Jacobs: We mustn't use the legitimate uncertainty about the future as an excuse to evade being certain what we want now.

[1] The participants were: Robert H. Anderson, Associate Professor of Education, Harvard University Graduate School; Jerome S. Bruner, psychologist, Director of the Center for Cognitive Studies, Harvard University; Dave Chapman, industrial designer, President, Dave Chapman, Goldsmith and Yamasaki, Inc.; Evans Clinchy, Editorial Associate, Educational Facilities Laboratories, Inc.; Lawrence A. Cremin, Frederick A. P. Barnard Professor of Education, Teachers College, Columbia University; Lewis Eigen, Vice-President, Center for Programmed Learning, New York; Earl Flansburgh, architect, The Architects Collaborative, Cambridge, Mass.; Herbert Gallagher, architect, The Architects Collaborative, Cambridge, Mass.; Harold B. Gores, President, Educational Facilities Laboratories, Inc.; Olivia Hill, Consulting Teacher, Bedford Public Schools, Mount Kisco, N.Y.; Jane Jacobs, author, Associate Editor, *Architectural Forum;* Jonathan King, Secretary and Treasurer, Educational Facilities Laboratories, Inc.; Roy Larmee, Assistant Professor of Education, University of Chicago Laboratory High School; C. Theodore Larson, Professor of Architecture, University of Michigan; Merrill C. Phillips, President, Board of Education, Bedford Public School, Mount Kisco, N.Y.; Charles O. Richter, Superintendent, Bedford Public Schools; Gray N. Taylor, Assistant Superintendent for Business Services, Bedford Public Schools.

EDUCATION FOR TOMORROW

Jacobs: What the contemporary and future citizens of Westchester County need is not lessons in cocoa cooking, the pleating of chintz curtains, or the hammering together of bookends and footstools, but an understanding of the aesthetics of design for the home and some knowledge of how the television set and the power lawn mower work.

* * *

Bruner: Education is not an enterprise carried out by wizards wearing funny hats. Everybody can take a part in it.

* * *

Gores: School should protect a child against a sense of anonymity. A youngster should have someone in authority over him—who knows him by his name...and who won't mispronounce it.

* * *

Richter: Schools should not be chopped off from their community. Every school, every student, needs a sense of community.

* * *

SCHOOL STAFF AND FACILITIES

Bruner: A room needs a memory. A lot of learning means seeing where you were. You come back to it: "My God," you say, "it needs a tail over there."

* * *

Eigen: The more teaching machines (and other technologically advanced aids) you get, the more questions students ask. . . . You'll always need teachers...to answer and direct the questions....History of technological advances has proved that one does not replace the other.

* * *

Bruner: Four hundred (in one group) is for circus loyalty and creation of pizazz.

* * *

King: For the library resource center, let's decentralize the space but centralize the resources....We don't have enough books and aids, usually to break it up in little smidgens.

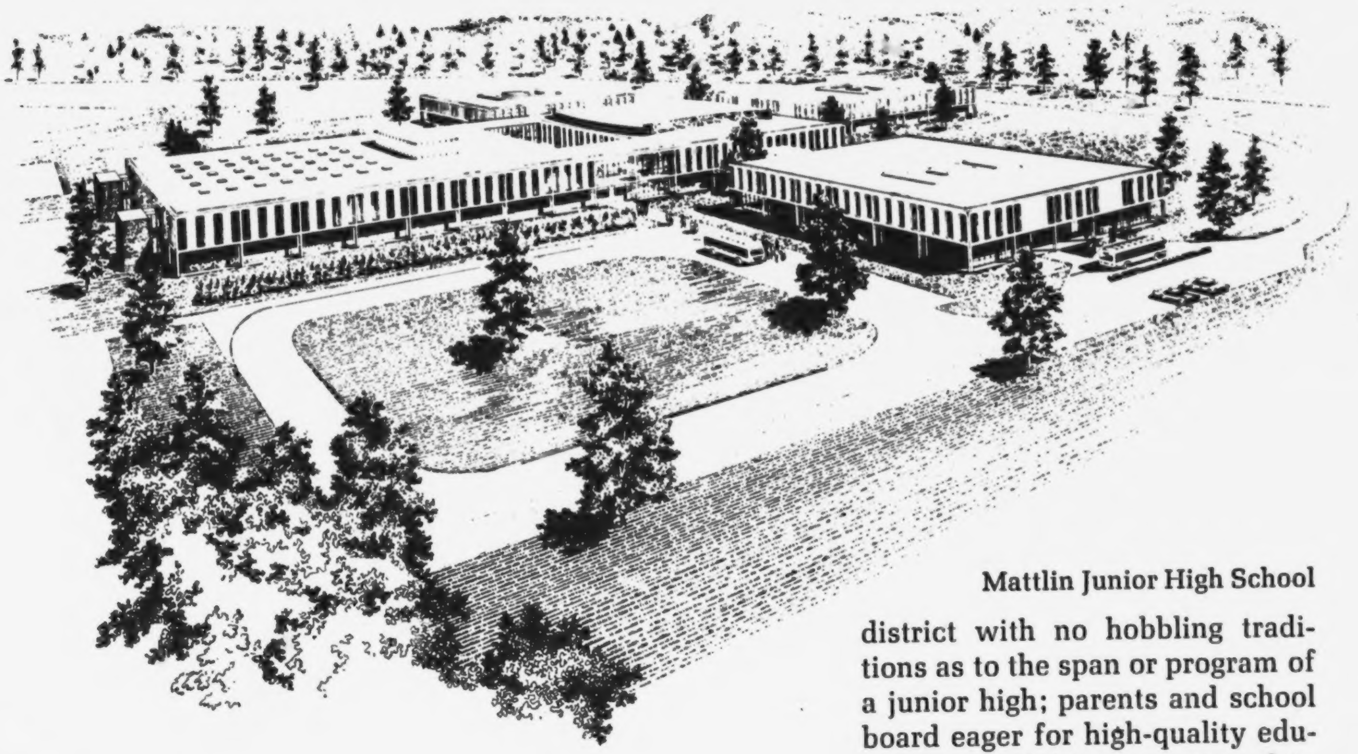
* * *

Anderson: Team teaching is inevitable—in 20 years there'll not be anything left of the self-containment we've known....The job is simply too complicated and must be divided up someway....Through insularity we crystallize incompetent idiosyncrasy.

* * *

Eigen: Once I was sitting in a library preparing a lesson when a young student came up and said, "Gee, do teachers have to use libraries, too?"

Three Houses Around a Court



Mattlin Junior High School

Last year Mattlin Junior High School, in a project conducted by Systems Development Corporation and sponsored by the U.S. Office of Education, was named as one of 12 schools in the country that have most "effectively implemented educational change." This strikes the visitor as an accurate, if colorless, accolade for this dramatic new school. Now in the second year of operation, it is bursting with ideas and enrollment.

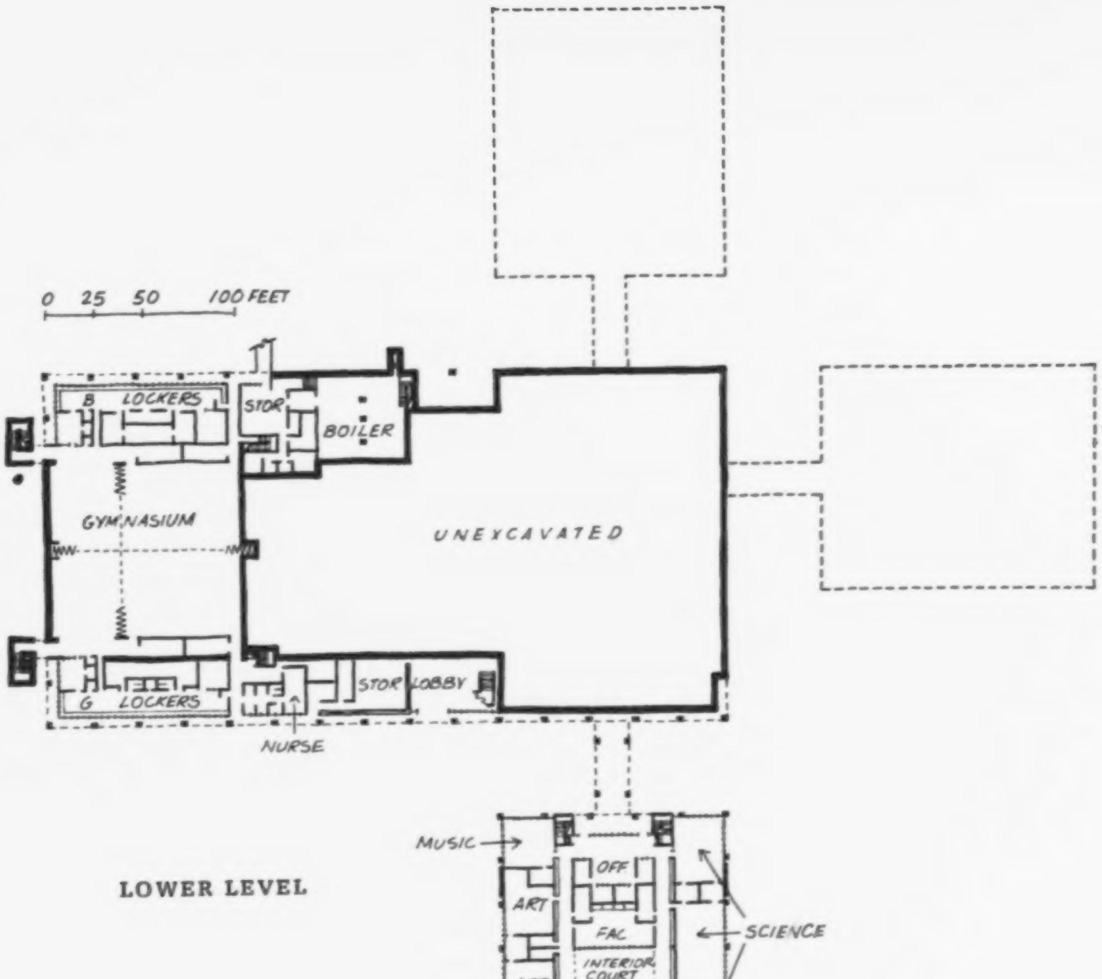
The school belongs to an up-and-coming district that is considering plans to pool certain talents and resources with six nearby Long Island districts. Dr. Robert Savitt, superintendent of the Plainview schools, chaired the group that made a year-long study and announced the cooperative plan early in 1965. He and his fellow superintendents believe they can provide better education for their schools by combining efforts in such areas as research, curriculum development, television, library services, and in-service training of teachers.

Mattlin reflects near-perfect enabling conditions: a young school district with no hobbling traditions as to the span or program of a junior high; parents and school board eager for high-quality education; administrators attuned to the problems and opportunities of change; architects versed in the policy of devising "an envelope" to put around a specific educational program.

Dr. Savitt and 100 staff members spent a full year in planning the program before considering the envelope. Preparation included consultation with parents and students (of all people), and a "dry run" of team teaching at another Plainview junior high. Then followed long sessions over a period of months with Lawrence Perkins and other architects at Perkins and Will to translate into masonry and tile, into skylights and plumbing, the instructional imperatives of the new school, where teaching is organized in vertical teams and which may ultimately be nongraded throughout.

The architectural solution places three houses around a central building that contains common academic and other facilities. Elevated bridges connect the elements and adjust differences in the site grade. A large light court divides the houses and the central resource area from the physical-education and industrial-arts wing. The lavish use of courtyards

This big 6-to-9 school groups students in three houses. Lower level plan, below, shows bridges that connect houses with central building. Each house is built around an interior court, left. A large court, open to the sky, adjoins library and cafeteria and has many uses, formal and informal, below.


0 25 50 100 FEET
B LOCKERS
STOR
BOILER
GYMNASIUM
UNEXCAVATED
G LOCKERS
STOR
LOBBY
NURSE
MUSIC
OFF
ART
FAC
INTERIOR COURT
ART
SCIENCE
MUSIC

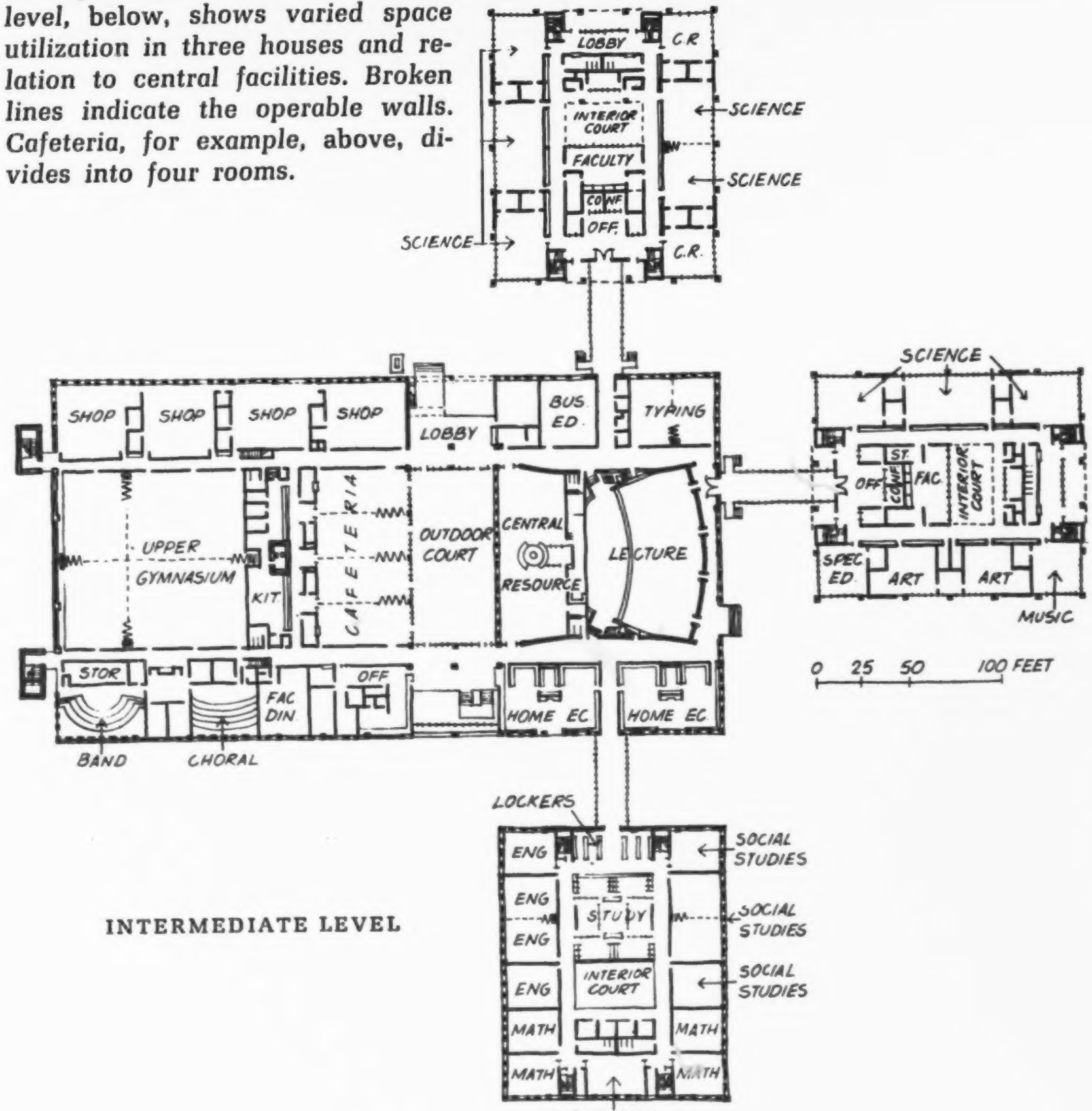
LOWER LEVEL

carries out the vaguely Spanish intent of the Perkins & Will design ("Let's let the children look inward at themselves and their own world, instead of out at their neighborhood split-levels," said Lawrence Perkins). In addition to the large court in the central building, which is open to the sky, each house has its own roofed-over court. That the courts, besides refreshing the spirit, serve other practical functions is attested by a Mattlin interoffice memorandum on "Use of the Open Court Area in B House," which lists a dozen uses, including class sessions, exhibits, musical and dramatic performances, and the cultivation of corn, sunflowers, and wheat.

At Mattlin, sixth graders have a house of their own; each child has his own homeroom and homeroom teacher. The other two houses are organized departmentally for grades 7, 8, and 9. The three houses are physically quite similar. All of them have their own resource centers overlooking the light court, with carrel-dividers on the perimeter and seminar rooms at either end. In each house, 20 classrooms open off double-loaded corridors, and in each, a pair of classrooms on either side of the building can be thrown into one by means of operable panel-type walls.

Each house has a teaching-team center, equipped with textbook stacks and space for planning, plus rooms for audio-visual equipment, and pre-viewing. Time alloted to teachers for planning is generous: three 50-minute periods a week per team, plus lunch periods when aides free teachers from supervisory duties. Even a brief visit to Mattlin illuminates the "effective implementation" of the instructional program. Principal William De Gennaro and his teacher teams abound with enthusiasm, new ideas, and mutual

Floor plan of Mattlin's intermediate level, below, shows varied space utilization in three houses and relation to central facilities. Broken lines indicate the operable walls. Cafeteria, for example, above, divides into four rooms.



INTERMEDIATE LEVEL

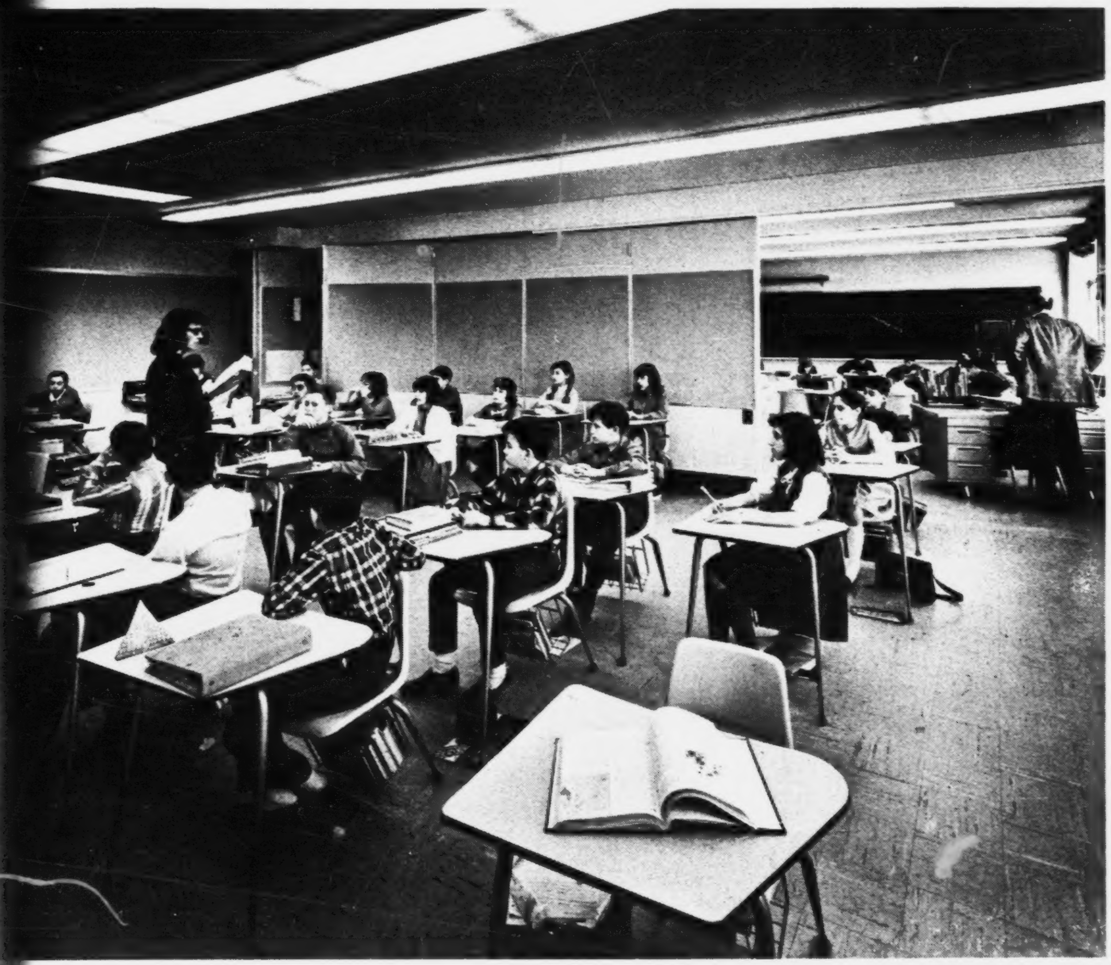
LOBBY
C.R.
SCIENCE
INTERIOR COURT
SCIENCE
FACULTY
CONF.
OFF.
SCIENCE
C.R.
SHOP
SHOP
SHOP
SHOP
LOBBY
BUS ED
TYPING
SCIENCE
OFF
ST.
CONF.
FAC.
INTERIOR COURT
UPPER GYMNASIUM
KIT.
CAFETERIA
OUTDOOR COURT
CENTRAL RESOURCE
LECTURE
SPEC ED
ART
ART
MUSIC
STOR
OFF
FAC DIN.
HOME EC.
HOME EC.
BAND
CHORAL
0 25 50 100 FEET
LOCKERS
ENG
SOCIAL STUDIES
ENG
STUDY
SOCIAL STUDIES
ENG
ENG
INTERIOR COURT
SOCIAL STUDIES
MATH
MATH
MATH
MATH
LANGUAGES

Mattlin's library, or resource center, two stories high, contains 48 study carrels arranged in various groupings in the big, open area. One librarian says carrels have improved concentration "300 per cent." Sunken reading pit is well patronized. Library's 7,000 volumes will eventually be almost tripled. Rolling carts make books available to resource centers in each house; the innovation has sharply increased circulation.

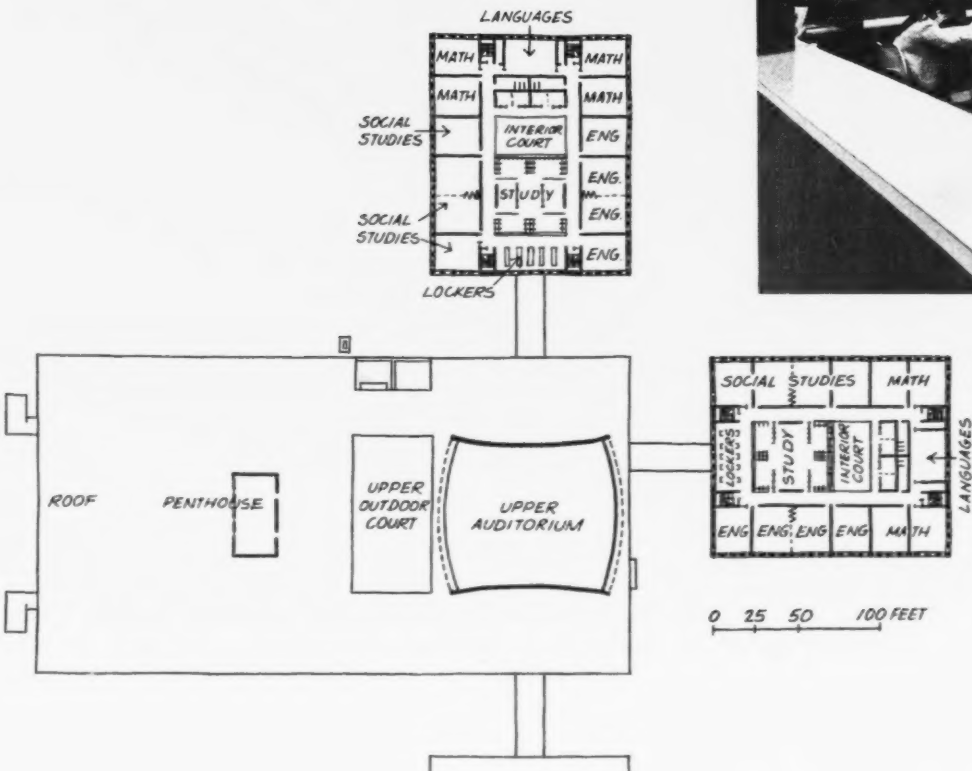
admiration. More to the point, a real concern for each child as an individual is manifest throughout the school, as well as the sense of youngsters accomplishing a good deal and enjoying themselves in the process.

Mattlin stands out among middle schools in the degree to which it exemplifies a deliberate, articulate middle-school "philosophy." Even so, the school to express this philosophy would not have been built had there not been the practical need of a district facility to serve grades 6 through 9. Ideally, the school could provide a more consistent and integrated program without grade 9, and perhaps Mattlin's ninth-graders would benefit from the sequential guidance and curriculum of a four-year high-school program. It is unlikely, however, that Plainview can take the ninth-graders into the high school for some time to come. On the other hand, conditions in the school district may mean moving half of the sixth graders out of Mattlin next year.

Superintendent Savitt and Mattlin's administrators, while they would question the advisability of extending the middle school down into fifth grade, are unanimous on the educational advantages of including the sixth grade in a middle school. In their view, the average sixth-grader nowadays has outgrown the self-contained classroom of elementary school, and is ready to go deeper into content. The structure Mattlin has devised for sixth-graders — combining a homeroom and limited specialization with team teaching and considerable freedom within the sixth-grade house —appears to be stimulating and agreeable, even to the slower children. Seventh-graders are granted further freedom to work on their own. As one of the Mattlin teachers says: "The more you give them to do, the more they want."



The floor plan on this page shows Mattlin's upper level. Photograph at left shows a double classroom with folding panel-type partition partially retracted. The resource center on upper level of each of the houses, below, overlooks interior court. Glass partitions separate seminar/conference rooms from study area. Low counters and dividers enclose individual study carrels.


LANGUAGES
MATH
MATH
MATH
MATH
SOCIAL STUDIES
INTERIOR COURT
ENG
ENG.
STUDY
ENG.
SOCIAL STUDIES
ENG
LOCKERS
ROOF
PENTHOUSE
UPPER OUTDOOR COURT
UPPER AUDITORIUM
SOCIAL STUDIES
MATH
LOCKERS
STUDY
INTERIOR COURT
LANGUAGES
ENG
ENG
ENG
ENG
MATH
0
25
50
100 FEET
PENTHOUSE
ROOF

UPPER LEVEL

Mattlin Junior High School
(Continued)

Mattlin's auditorium, or large-group instruction area, is a singularly versatile space. Photograph shows operable walls trisecting the stage. They can be extended to divide entire area.

HOWARD B. MATTLIN JUNIOR HIGH SCHOOL

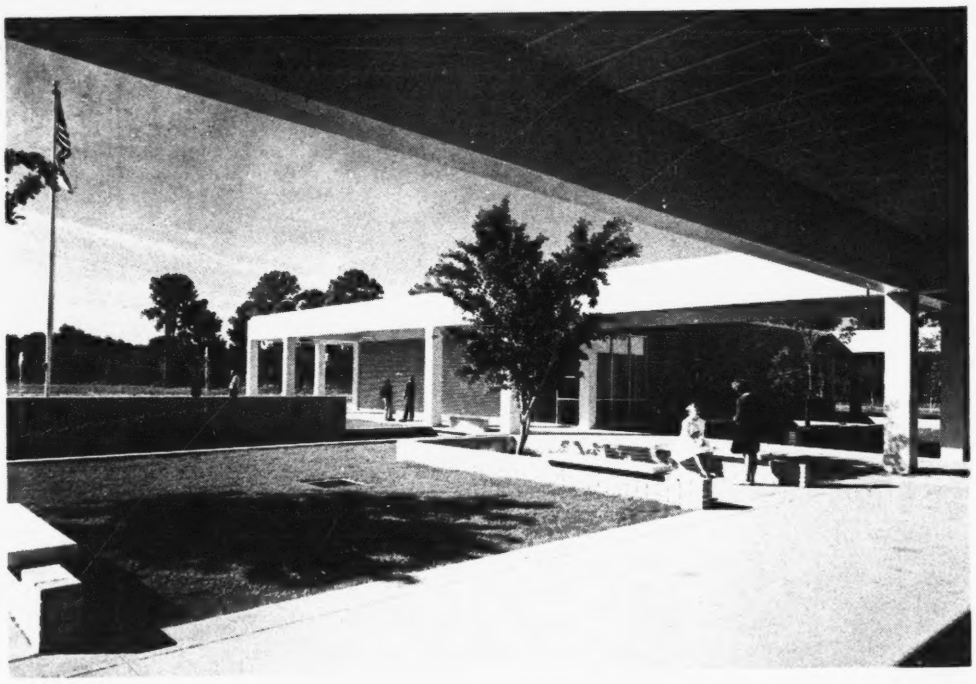
Plainview-Old Bethpage School District

Plainview, Long Island, New York

Size: 207,755 sq. ft.
Cost: $3,880,388
Cost per sq. ft.: $18.68
Cost per pupil: $1,764

Grades: 6-9
Opened: December, 1963
Capacity: 2,200
Present Enrollment: 1,933
Superintendent: Robert F. Savitt
Principal: William J. De Gennaro
Architects: The Perkins & Will Partnership
James D. Lothrop, *Partner in Charge*
Project Architect: Wesley V. Pipher
Designer: Fred Hufschmid

First Phase of an Educational Complex

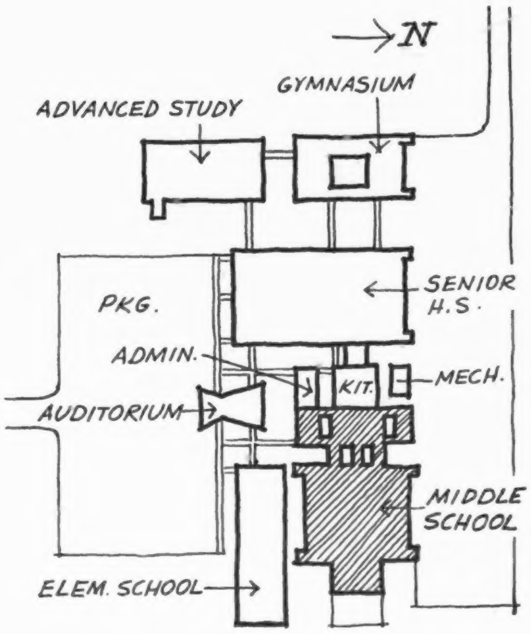


McIntosh Middle School

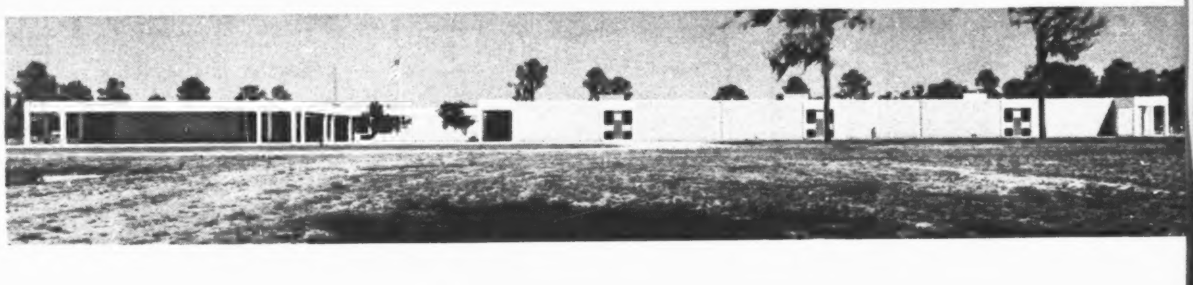
This outsize middle school, enrolling grades 5 through 9, is the first element of a scholastic complex that will eventually enroll students from kindergarten through high school, a total of 3,500 to 4,000 students. Eventually there may also be a two-year community college. The heavily wooded site covers 140 acres in a fast-growing section of the state.

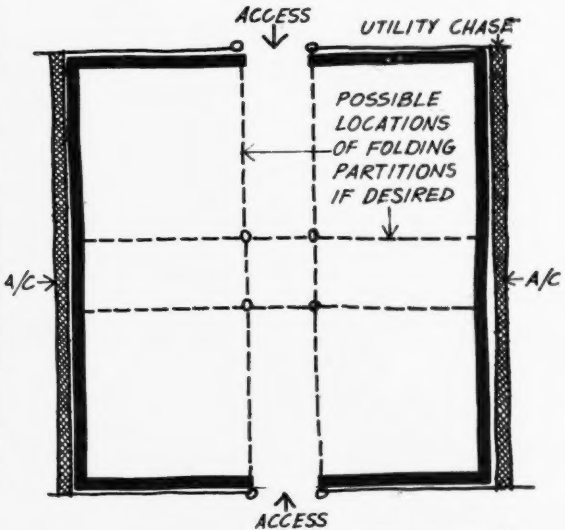
The county had had experience with elementary, junior, and senior high schools all on one site, with each building self-contained. Now the school board and administration decided to plan a consolidated "student center" that would take advantage of the economy of common facilities. Furthermore, the board had agreed to air condition all new schools. With natural ventilation no longer a problem, a compact plan became feasible and, indeed, economically desirable. When complete, the center will have an over-all administrative unit, and the component schools will share an auditorium, a kitchen, and a central teachers' lounge, library, and production center.

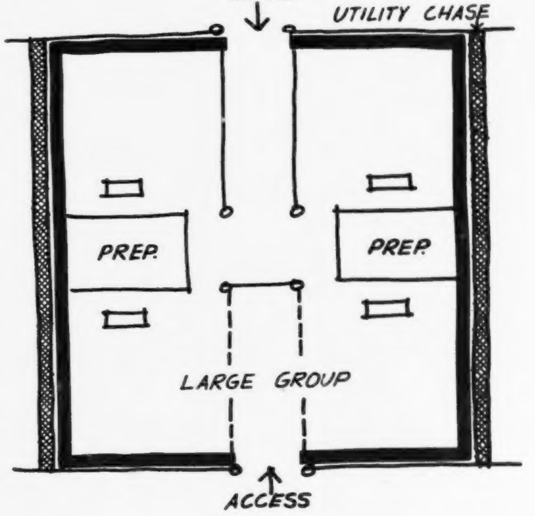
The first facility to open in this space-age dream, the McIntosh Middle School, embraces an unusually wide range of grades, and is already—after less than three years of operation—above capacity. As matters now stand, the school offers something of a cautionary tale, with lessons for school districts everywhere. Staff mobility can unexpectedly change brave new school plans. An innovating principal, for example, may move on to another post, leaving the new school to a more conservative, or less committed, administration. Occasionally, mobility works the other way around. In Sarasota County, the future was sooner than they thought.



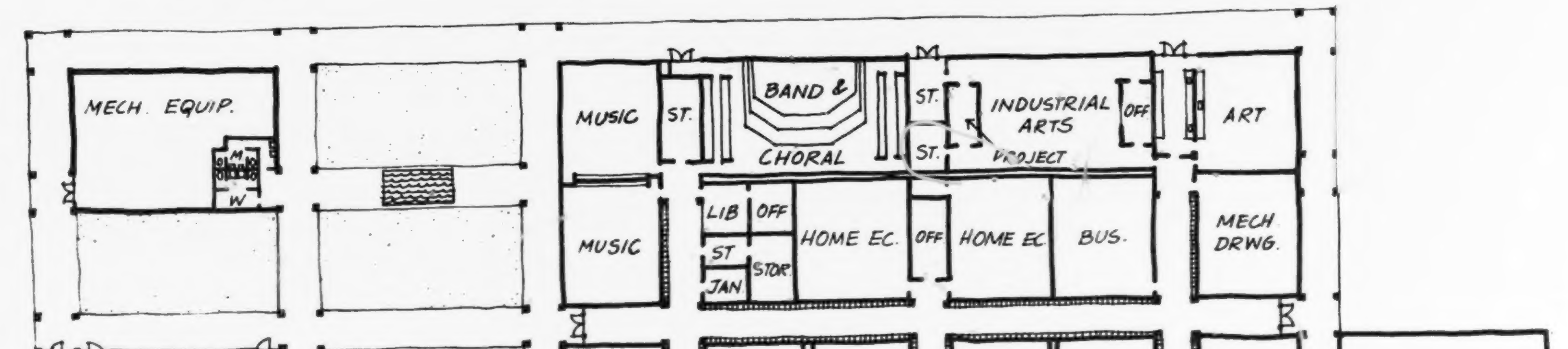
The site plan, above, gives some notion of the eventual shape of Sarasota's projected educational complex. So far, the only element operating is McIntosh Middle School.




ACCESS
UTILITY CHASE
POSSIBLE LOCATIONS OF FOLDING PARTITIONS IF DESIRED
A/C
A/C


ACCESS
UTILITY CHASE
PREP.
PREP.
LARGE GROUP
ACCESS

This large (capacity 1,300) middle school is built to an economical compact plan, permitting, among other things, air conditioning. Standard unit is still the conventional self-contained classroom, above. To accommodate newer methods of instruction, there are two large-group instruction rooms. Also, the four-classroom clusters could be diversified in function if present partitions were changed to operable partitions. Drawings, right, show how it might be done—the drawing above, the placement of folding partitions, the drawing below, another application.

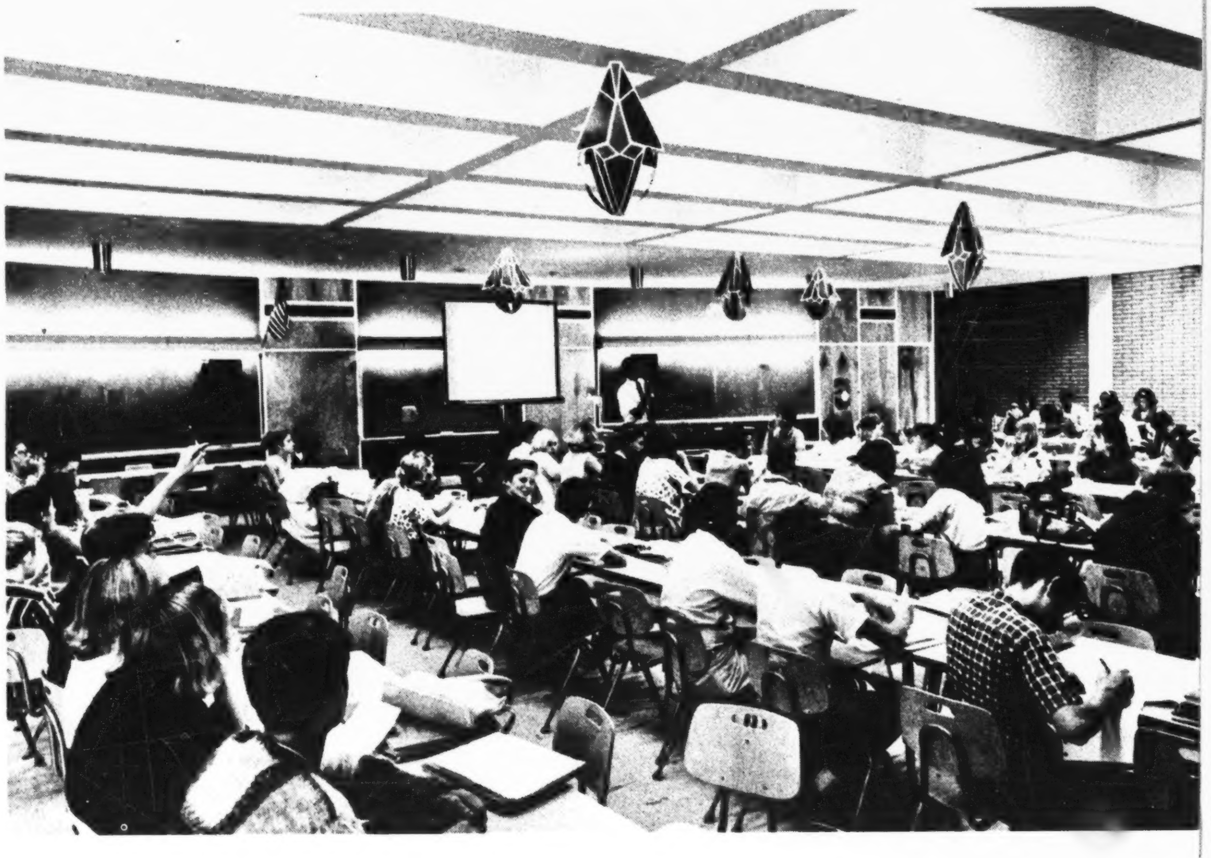

MECH. EQUIP.
M
W
MUSIC
ST.
BAND & CHORAL
ST.
ST.
INDUSTRIAL ARTS
PROJECT
OFF
ART
MUSIC
LIB
OFF
ST
STOR
JAN
HOME EC.
OFF
HOME EC
BUS.
MECH DRWG.
JAN
OFF
REC'V.
ST
DINING & CLASSRM.
KITCHEN
DINING & CLASSRM.
LIBRARY
WORK RM.
C.R.
SEM
G.
B
LARGE CLASSRM.
BOYS LOCKERS
DRYING
MECH
SHOWERS
OFF
STOR.
OFF.
GIRLS' LOCKERS
LANGUAGE
SCIENCE
OFF
PREP RM
PRIN
WAIT
CONF
ST
WAIT
ADMIN.
BUS LOADING
0 10 25 50 100 FEET

McIntosh exemplifies the school that is somewhat too conservative in design for the instructional program of a new administration. If three short years can bring about such a marked change in attitudes and requirements, it strengthens the case for building into new schools a true architectural hedge against the educational future.

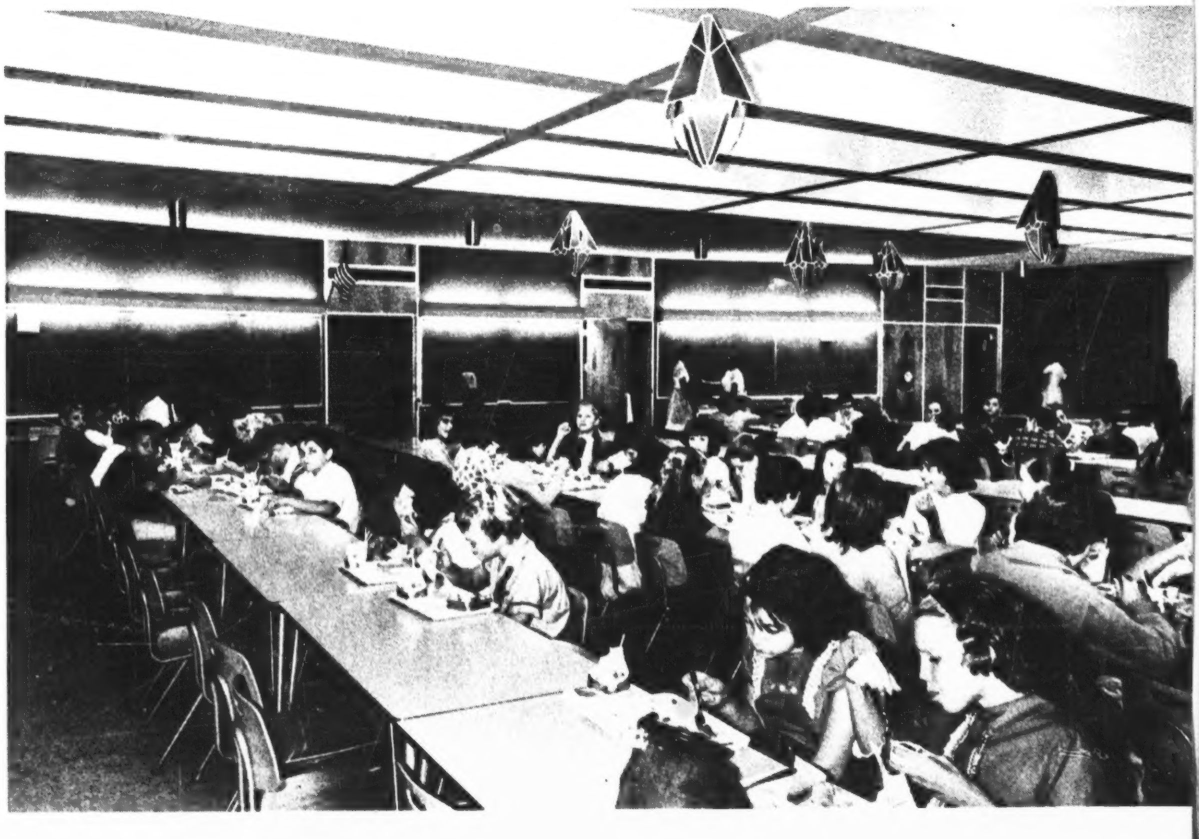
The McIntosh Middle School is squarely based on the standard classroom as the key unit. To accommodate new instructional patterns, there are two large-group rooms (roughly four times the size of the standard classroom) and a dozen or more small seminar/conference rooms serving clusters of classrooms. All rooms are self-contained, with access from conventional corridors (a few special rooms open also to the outside). In general, there appears to be a Sarasota view that it is a good idea to manipulate elementary-school space by means of folding and other operable walls, but that this kind of space manipulation is unnecessary for older children. In intermediate schools and high schools, Sarasota tends to move the children rather than walls.

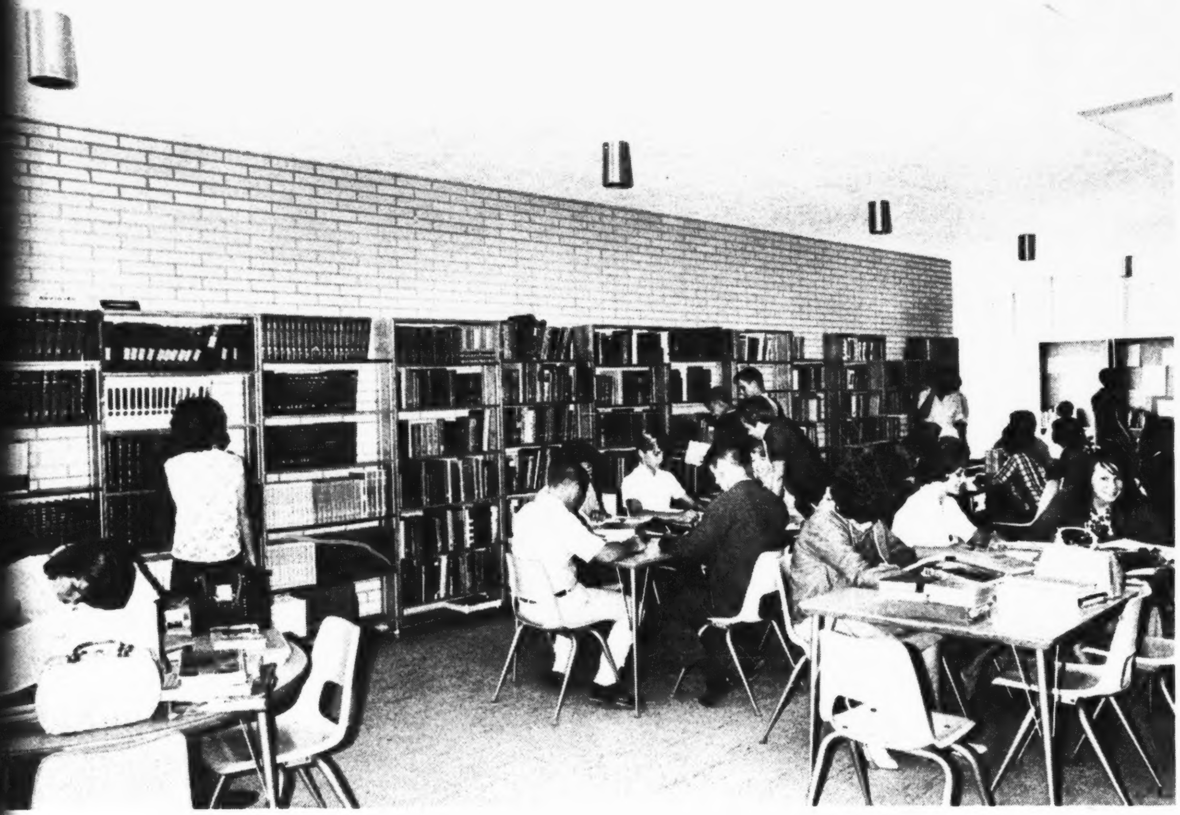
Among the many successful design features is the generous use of pleasantly scaled courtyards. Physical-education space and locker rooms at one end of the school balance two large lecture-dining rooms at the other, which accommodate 300 to 400 students. The library, with agreeable courts to the north and south, joins the grid of classrooms with the administration-dining room wing. Eventually—when the complex is complete or when enrollment justifies it—the plan provides for doubling the library space by extending it to embrace the adjoining courts.

There is small likelihood of moving the ninth grade into the high school, even when there is a

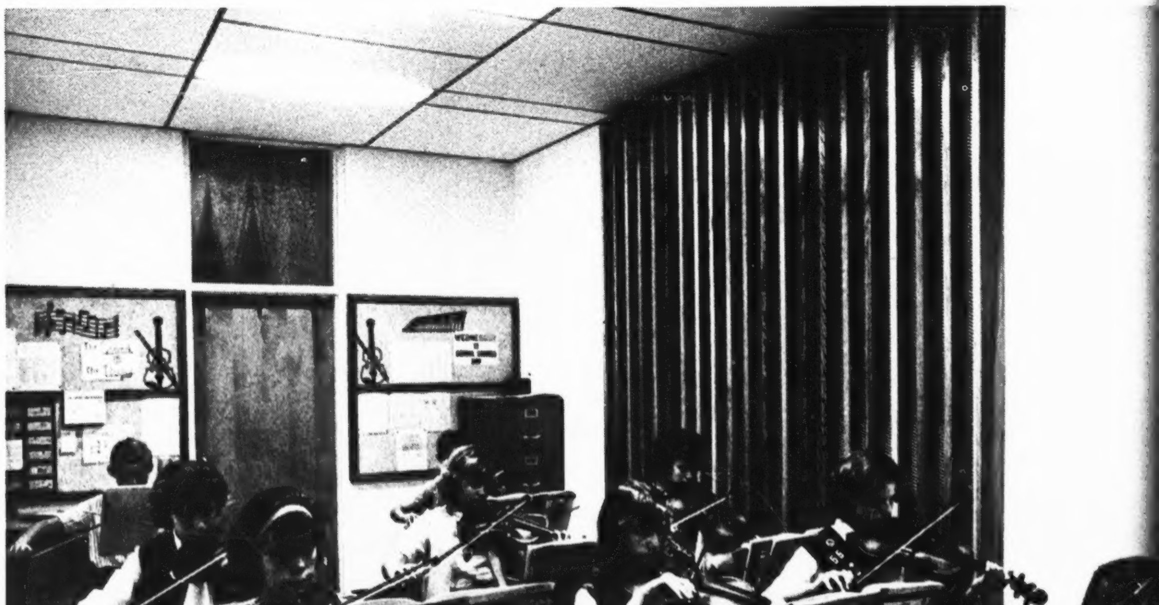


Well-planned schools nowadays eschew single-purpose large spaces. McIntosh's two big dining rooms hold up to 400 students and are used in off hours as lecture halls.





The McIntosh library is foreseeably too small. The original plan envisages doubling its size by extending it to include adjoining courts (see floor plan, page 40). Photographs above and below show aspects of the school's provision for music. A cameraman shoots ensemble for school's evolving closed-circuit television system. Below, a string section at practice in soundproofed music room.



high school, though the administration would like to. As District Superintendent Russell Wiley says: "The fifth grader can't handle his attempts at ninth-grade sophistication," adding that at school dances "we let the ninth graders dance and open up the corridors to let the fifth graders run." The gap between the two grades does strike the observer as extreme; passing between classes, the fifth grade seems in instant danger of being run over by the ninth.

As one of the first two air-conditioned schools in Sarasota, the new building caused something of a community stir. People tended to object in particular to the relative lack of windows. School air conditioning is now generally accepted in Sarasota, but designs since McIntosh have modified the window treatment.

At the outset, the McIntosh planners contemplated extensive team teaching and flexible scheduling. Before approaching actual design and construction specifications, for instance, Sarasota school board members, the principal-elect of the new school, and architect Mark Hampton met at Harvard with Judson Shaplin and other team-teaching specialists. As it turned out, however, the principal was disinclined to proceed apace with team teaching, partly because he felt the staff was not ready for it. Accordingly, though the school was expected to open with at least some teaching organized in teams, the final design took more account than had the original plan of possible "retreat to the conventional."

The present McIntosh administration, while liking the facility on the whole, regrets its apparent inflexibility. The new principal, Billy B. Reeves, who came fresh from developing a nongraded program in a Sarasota elementary school, plans many changes. At present the school program is essentially departmentalized even for fifth and sixth graders, who go from teacher to teacher—as many as six different teachers in a typical day. Thus far teaching teams function only to a limited extent—in physical education, in eighth-grade English and social studies, in seventh- and eighth-grade science. With the approval of Superintendent Wiley and the school's curriculum consultants at the University of South Florida, Mr. Reeves plans a complete team-teaching program and rescheduling by September of 1965. Teams will be organized in a variety of ways, some crossing grade and subject lines. Ultimately, if plans work out, the school will become fully nongraded, with a "completely flexible" time schedule.

Given such sweeping intentions, it is no wonder that the new McIntosh regime would prefer "one big barn" of a schoolhouse, without any divisions they can't easily demolish or recreate themselves. As it is, they hope to get enough money to make a number of changes that will help to accommodate physical layout to instructional design. Among other changes, they would like, for instance, to make the large-instruction rooms divisible by means of operable partitions, use the present library for classes, and achieve greater immediate library space by transforming one of the two lecture-dining rooms into a big open "resource center" combining library with guidance and project areas.

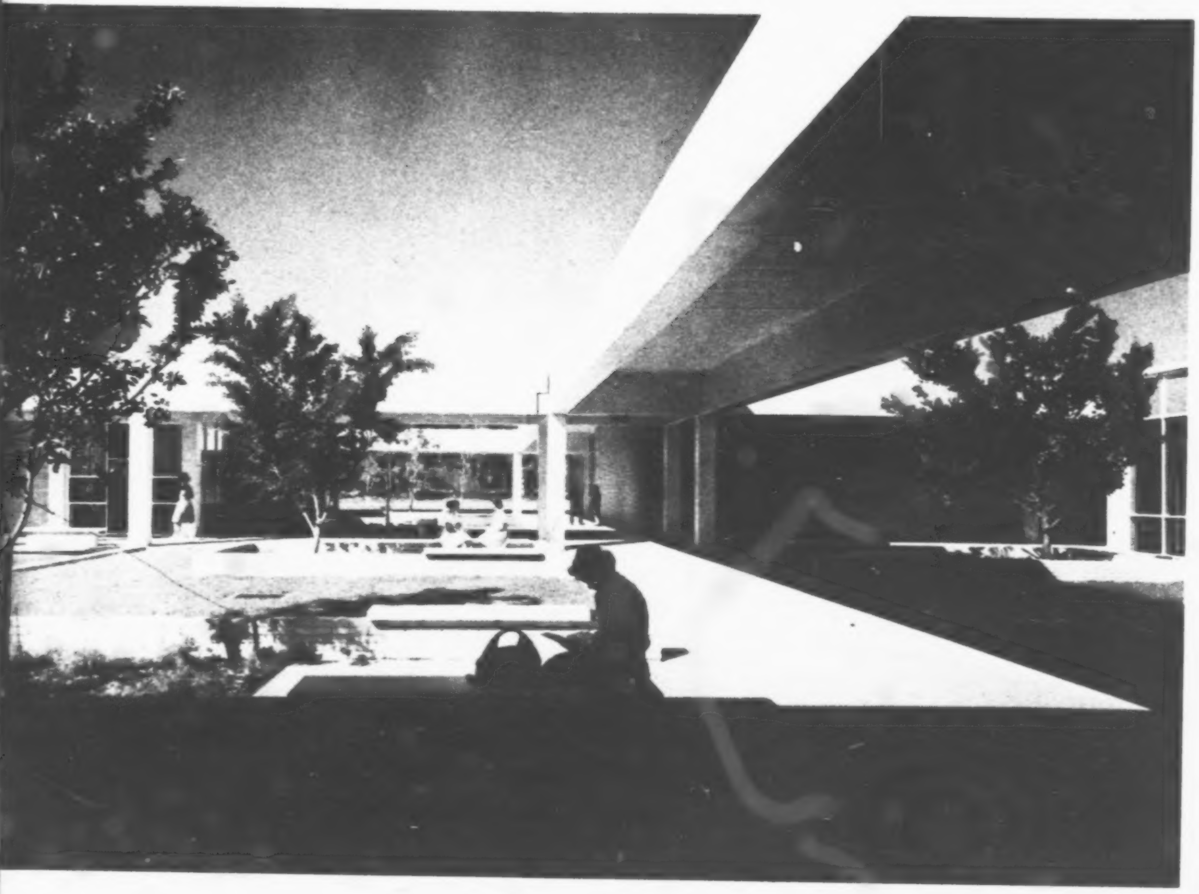
The McIntosh story casts light on the ambiguities of that catchword "flexibility." Educators and architects toss it back and forth freely, but if they fail to define the term in its specific application, they are quite apt to be using it to mean quite different things. (The difficulty is not unlike that

McIntosh provides all its students with full equipment and experienced teachers in the nonacademic specialities. Photograph, above, shows older boys working on mural. Rooms for art, music, domestic and industrial arts, and business education are concentrated in one area.

caused by the language barrier between Englishmen and Americans.) Who wants what kind of flexibility for what purpose? School planners might well try to answer that question at the outset. To an architect, "flexibility" may mean that a given school contains a number of long-span, nonload-bearing masonry walls that can be knocked out at no great cost. This is true, for instance, at McIntosh, where several very large, open areas could be created from existing four-classroom clusters. A schoolman, on the other hand, may use "flexibility" narrowly to describe a school with *operable* partitions—i.e., partitions that can effect instant transformation of space. In between these radically different kinds of flexibility, other definitions are possible. There is, for example, the flexibility provided by *demountable* walls (as in Barrington and Los Altos) which make possible major space alteration without knocking out walls.

In theory, inexpensive masonry walls can be destroyed and removed, to be sure. But, in practice, communities are quite unlikely to take such measures with new schools. "Remodeling" a school that won't be paid for until 27 years from now does not appeal to most taxpayers. What McIntosh illustrates, *inter alia*, is the importance to school districts everywhere of building schools with partitions that can be moved easily, and of making sure that the school staff understands precisely what kind of flexibility exists in any given school, and what can be done with it. Sometimes the problem is as much one of communication as it is of design.

It should be instructive to look at McIntosh a few years hence, to see how the new administration has been able to come to terms with this school's particular kind of flexibility.



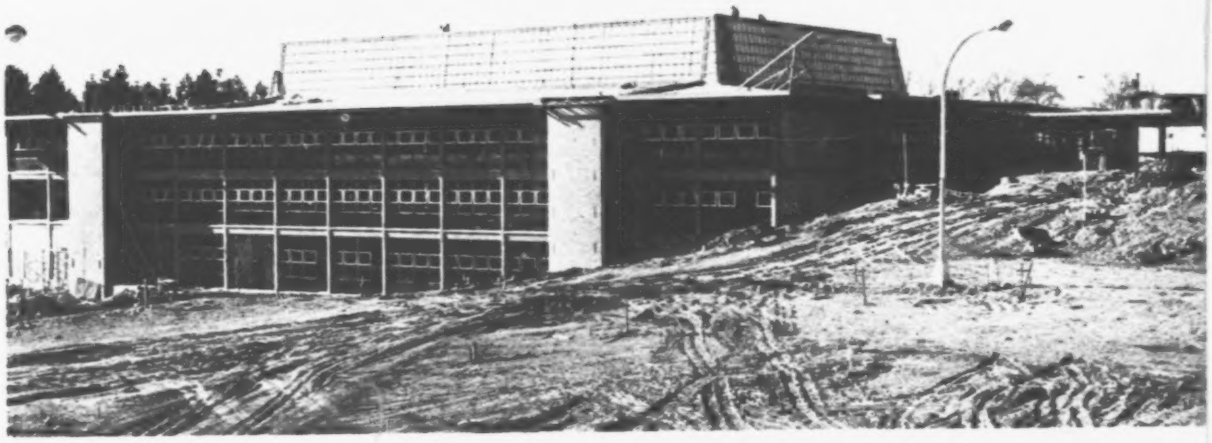
McIntosh means to take advantage of its natural blessings. Here students are making casual use of one of many courtyards architect Mark Hampton worked into the design. A fine wooded area on the site, complete with pond, is being developed as a nature trail and an outdoor space for science study.

McINTOSH MIDDLE SCHOOL
McIntosh Student Center
Sarasota County, Florida

Size: 102,145 sq. ft.
Cost: $1,144,337
Cost per sq. ft.: $11.20
Cost per pupil: $880
Air Conditioned

Grades: 5-9
Opened: Fall, 1962
Capacity: 1,300
Present Enrollment: 1,370
Superintendent: Russell W. Wiley
Principal: Billy B. Reeves
Architect: Mark Hampton

From the Top Down



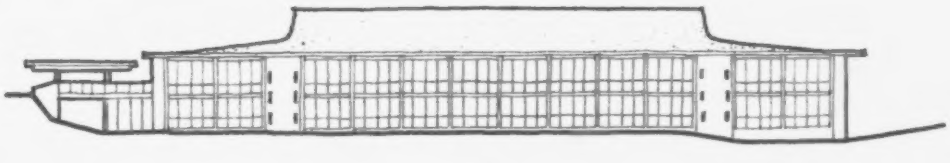
Pleasant Hills Middle School

This middle school, even when half finished in February of 1965, promised to be a bright landmark in this suburb seven miles from the heart of Pittsburgh. Rising three stories in the dish-shaped hollow of its appointed site, the school has a roof rather like that of an enlarged, flattened pagoda. Enhancing the distinctive shape is its treatment: white mastic compound paved with marble chips.

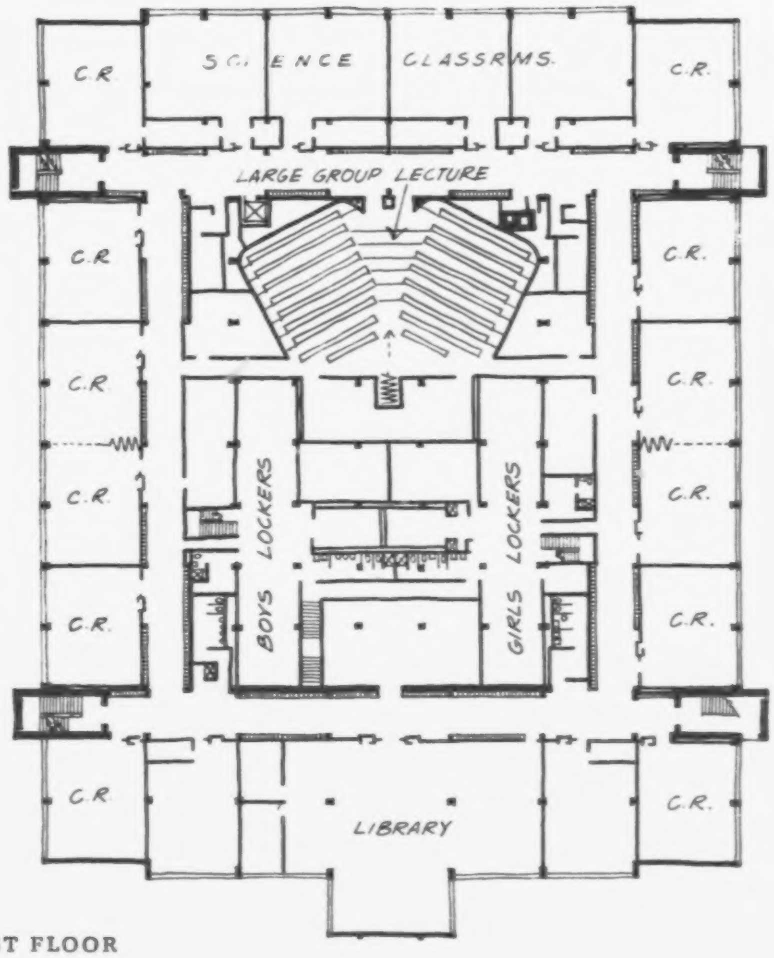
The roof design takes on importance because of the way in which the architects handled a difficult grading problem. Only the top of the three-floor school is generally visible from the surrounding area and from the main, or northern, approach to the school. Viewed from the west, the first floor—the principle classroom floor—is also visible. Only from the east and the south are all three floors revealed.

In marked contrast to the middle school in Barrington, Ill., whose architects used grade to minimize the gymnasium, Celli-Flynn made the Pleasant Hills gym-auditorium (which will be in heavy community use) the center of a core of spaces common to the whole school. The roof expresses the gymnasium beneath it; the surrounding parapet houses mechanical equipment. Classrooms flank the gym, with administrative offices to the fore on either side of the main entrance and homemaking, music, and art rooms to the rear.

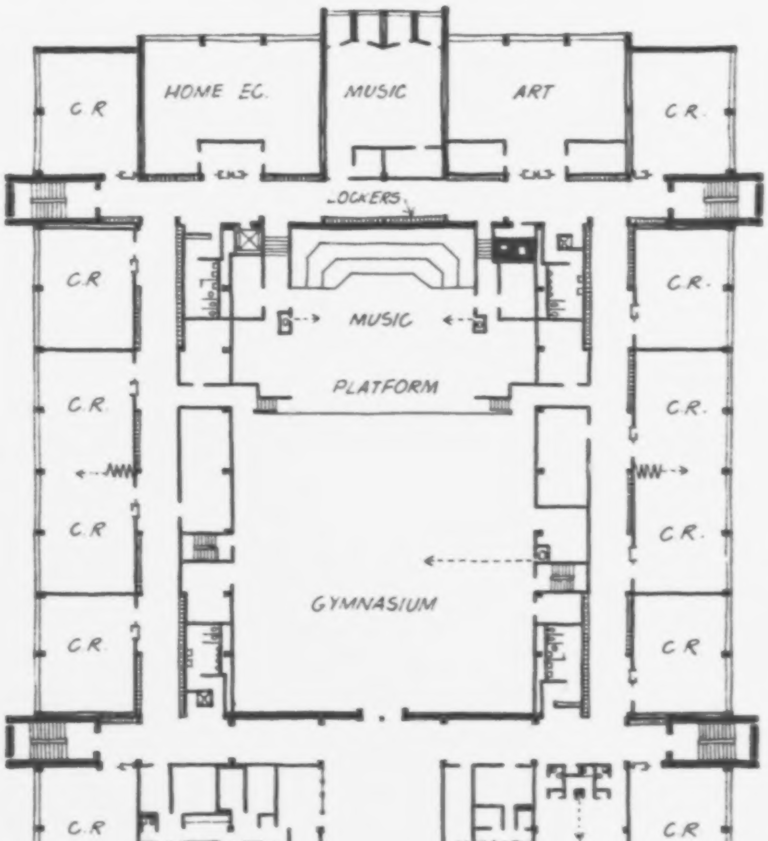
The stage in the gym-auditorium includes a music area with movable tiers that can be closed off by Coil-Wal partitions. The gym-auditorium itself is divisible by another Coil-Wal partition into two large-group instruction or play areas (like the arrangement at Kennedy Junior High School in Natick, Mass.). On both this floor and the one below, classrooms are grouped by fours on either side of the central core, with a buffer zone of storage space, toilets, conference rooms, and locker rooms between. All classrooms



The architects of Pleasant Hills Middle School translated site problems into design attributes by relating the school to the conformations of its hilly site. Construction photograph shows school from the northeast with main entrance at grade into the building's upper level. Elevation, below, shows Pleasant Hills from the west, with the two upper levels revealed. Canopied bridge to lobby and administration offices is at left.


C.R.
SCIENCE CLASSRMS.
C.R.
LARGE GROUP LECTURE
C.R.
C.R.
C.R.
C.R.
C.R.
C.R.
C.R.
C.R.
BOYS LOCKERS
GIRLS LOCKERS
C.R.
LIBRARY
C.R.

FIRST FLOOR


C.R
HOME EC.
MUSIC
ART
C.R.
LOCKERS
C.R
C.R.
MUSIC
PLATFORM
C.R
C.R.
C.R
C.R.
GYMNASIUM
C.R
C.R
C.R
ADMIN.
HEALTH
FACULTY
C.R
0 10 25 50 FEET

SECOND FLOOR

Pleasant Hills Middle School
(Continued)

are unit-ventilated and all interior spaces exhausted, but there is air conditioning only in the music rooms.

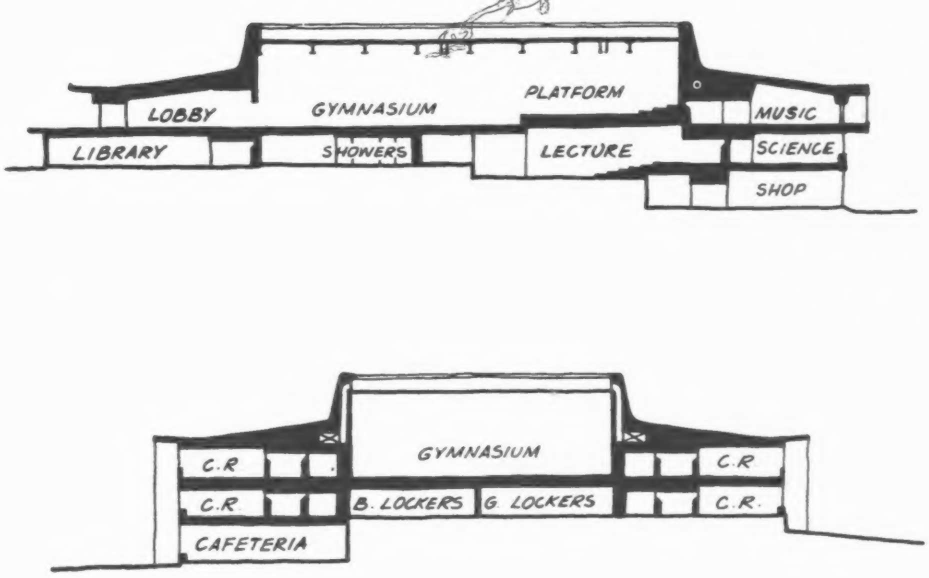
Both classroom floors include two large-group instruction rooms with operable partitions; they can be converted by hand into standard-sized classrooms. In addition, the lower floor has an extra large area with tiered seats, its high ceiling accommodated by the auditorium stage above. It is planned as a science-lecture hall, and for use by groups of all sizes. Of approximately the same generous size is the library across the front of the same floor, with an extension that looks out on a landscaped vista.

The ground floor, curving around the hillside and less than half the size of the floors above, is devoted to nonacademic functions, such as shop and cafeteria. The architects are particularly pleased with such innovations as the prefabricated, double-barreled teacher's closet and with the arrangements for sound control. The music-practice rooms are isolated from the homemaking and art rooms by double walls, noncontinuous floor slabs, and a separate air-handling system which prevents the transmission of sound via duct work. The gym-auditorium and music-room stage are similarly isolated, vertically and horizontally. For controlling sound within the classrooms, ceilings are fitted with acoustical tile at the back of the room to absorb sound, but are untreated in the front to permit the teacher's voice to carry.

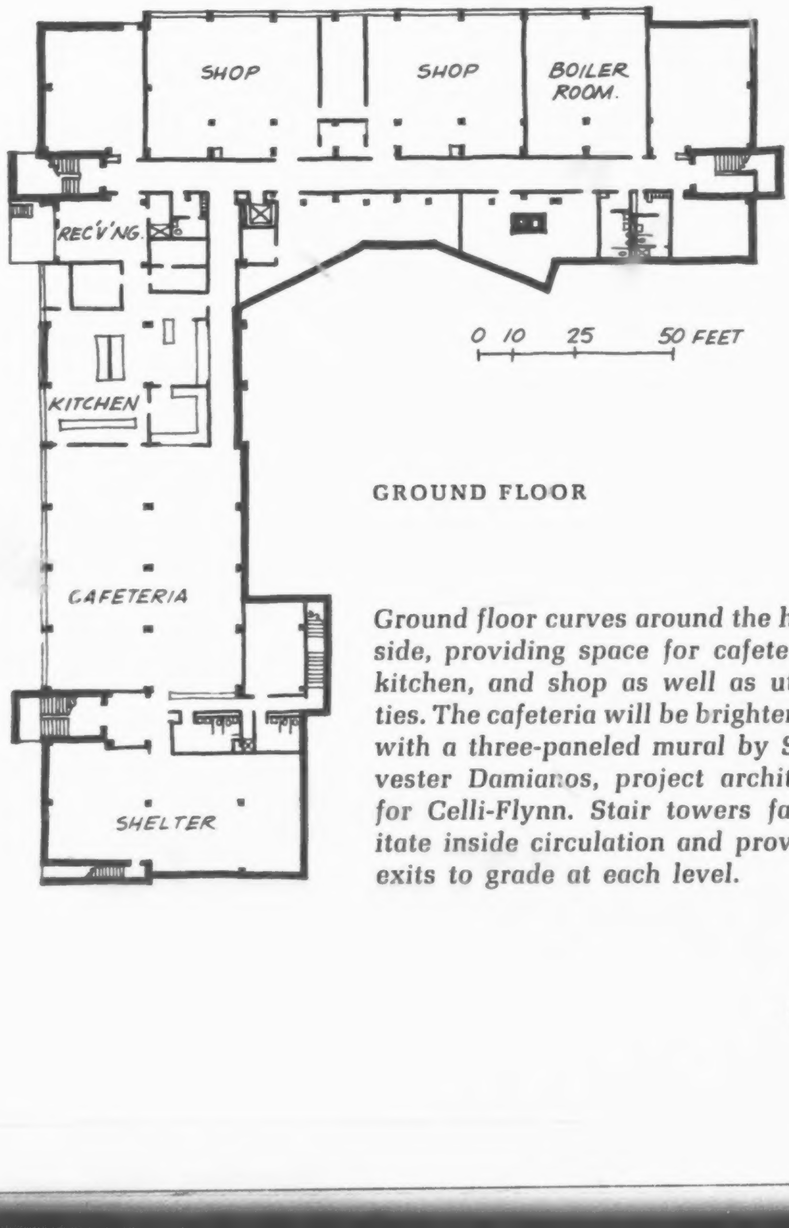
All this design and engineering ingenuity will express an educational program that credits considerable influence to the middle schools of Saginaw, Mich. Supervising Principal William J. Blakley has lived through a good deal of educational history, and he takes a benign wait-and-see attitude toward team teaching and nongradedness. "Maybe a subsequent administrator will go to team teaching," he says, and he believes the new middle school is flexible enough to accommodate this and other innovations.

But although the West Jefferson Hills administration plans no sweeping instructional changes to match Barrington's, for instance, or Plainview's, the new school will reflect a very definite middle-school philosophy. The West Jefferson Hills Union School District was ready to shift from the prevailing 6-6 pattern, in part—perhaps primarily, because school board and administration were convinced of the superiority of a four-year senior high school. They were also conscious of the drawbacks of the conventional 7-8-9 junior high, with many educators believing, as Mr. Blakley has written, "that while the theory of the junior high school is excellent, in practice it has resulted in junior high schools becoming miniature senior high schools...." The West Jefferson Hills people saw reason to agree "that this movement downward of the patterns of the senior high school...has multiplied and intensified the problems of [the] normal growth and development" of the younger children.

As in school districts everywhere, educational concerns like these were backstopped by sheer necessity and by educational imperatives in other areas. West Jefferson Hills was faced, for one thing, with buildings up to capacity at all levels; and, for another, with the need to improve elementary education by making space in the lower schools for kindergartens and central libraries. The more they looked into the matter, the more school board and administration became convinced that a 5-8 school would not only best meet immediate practical needs but could provide a



Floor plans, plus sectional drawings, of Pleasant Hills' three levels appear on this page and the page facing. The plans, opposite, show first floor and second floor plans. These floors contain all the classrooms, the gymnasium-auditorium, rooms for art, music, and homemaking, the library, and other special facilities. Placing the auditorium, which is expected to serve many community purposes, high in the building made it readily accessible to grade at the main entrance. Sections, above, indicate its central position. Note also tiered lecture room on first floor.



GROUND FLOOR

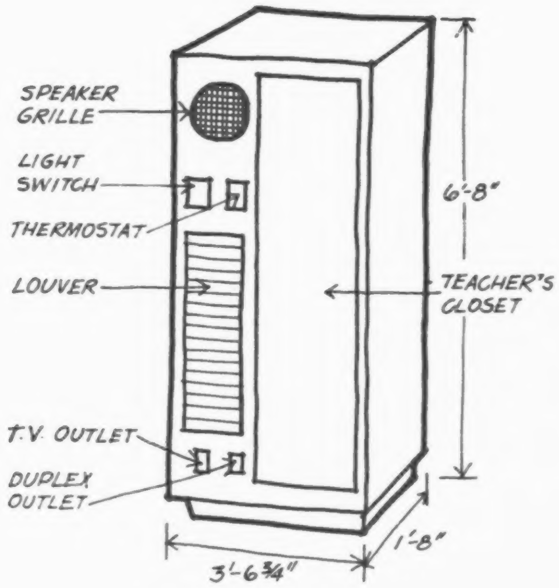
Ground floor curves around the hillside, providing space for cafeteria, kitchen, and shop as well as utilities. The cafeteria will be brightened with a three-paneled mural by Sylvester Damianos, project architect for Celli-Flynn. Stair towers facilitate inside circulation and provide exits to grade at each level.

Pleasant Hills Middle School
(Continued)

greatly improved program and environment for youngsters aged 10 to 14—a system that was "forthcoming, rather than continuing a pattern which many feel is no longer considered adequate," in Mr. Blakley's measured words.

Mr. Blakley and his associates feel that even though they propose no radical shift in instructional program ("programs in these grades are pretty largely set by the State"), the new middle school will offer an improved "school society and environment" for the children, with more chance at self-directing activities and intellectual stimulation than an elementary school usually provides. Specifically, it will be possible to group children more homogeneously (with 200 plus per grade, instead of the present 25 to 90 in seven different buildings). The school can afford superior facilities in art, physical education, music, and other special areas—and these will now be available to fifth and sixth graders for the first time. One aspect of this "school for growing up" will be a carefully staged transition from the substantial self-containment of grades 5 and 6 to the departmentalization of 7 and 8.

As a result of their studies and of looking at middle schools in Saginaw and elsewhere, the West Jefferson Hills people see many other advantages to the new arrangement, from cafeteria efficiency to provision for individual differences. In all, Mr. Blakley has presented the district with a good dozen and a half reasons in favor of the middle school (on the negative side, he could report only two minor disadvantages, one being that "girls in the middle school might object because boys are not mature enough"). He has high hopes that the new school, in its striking new building, will prove its worth, and will accommodate the future as it unfolds.



The architects used several original designs in Pleasant Hills, including this unusual prefabricated unit combining a teacher's closet with various functional necessities such as public-address speaker, television outlet, and thermostat. It will extend less than nine inches into corridor. Surface, brightly painted, can be used to display art.

PLEASANT HILLS MIDDLE SCHOOL

West Jefferson Hills School District

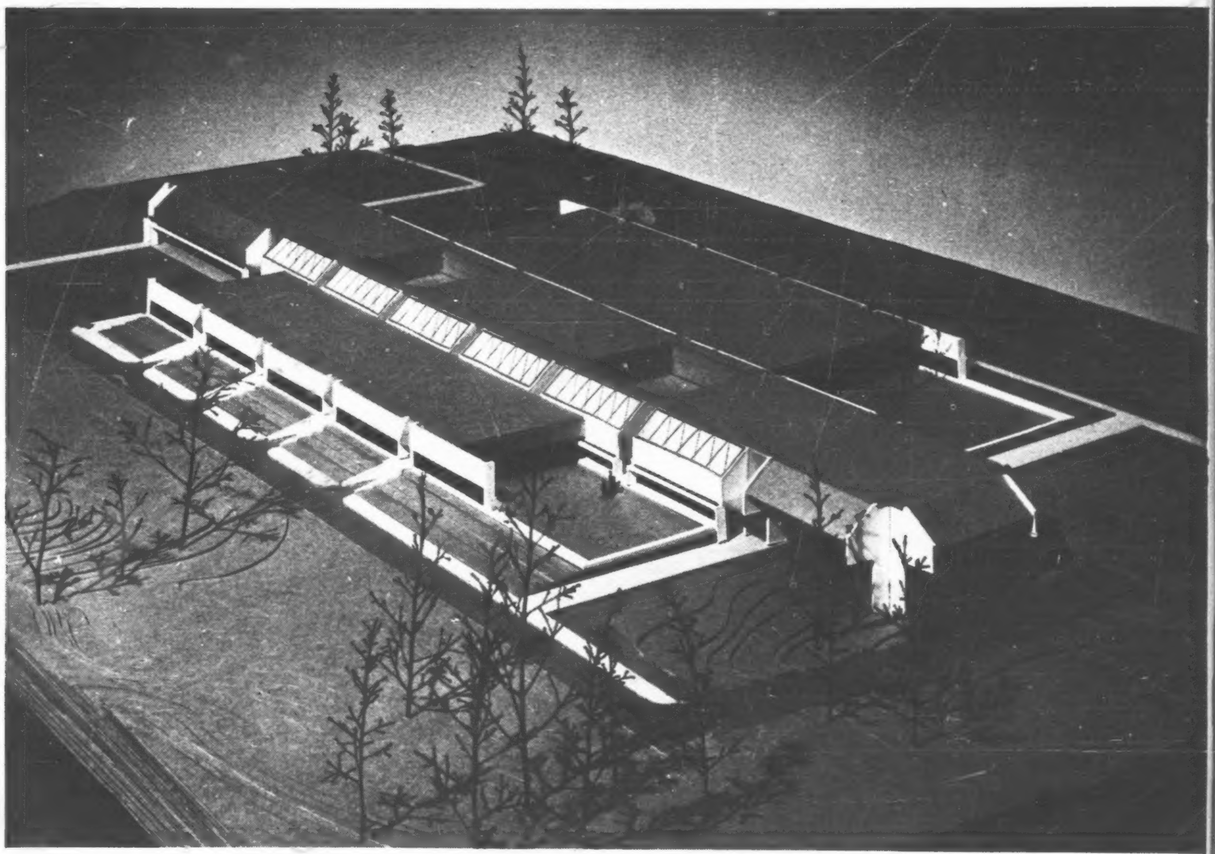
Pleasant Hills, Pennsylvania

Size: 110,600 sq. ft.
Cost: $2,090,000
Cost per sq. ft.: $18.90
Cost per pupil: $2,055

Grades: 5-8
To Open: September, 1965
Capacity: 1,017 (960 to start)
Supervising Principal: W. J. Blakley
Architects: Celli-Flynn
Sylvester Damianos, *Project Architect*

PART III

"Walls Will Never Become Permanent"



Henderson Junior High School

Byron Chapman, designer of the Henderson Junior High School, says: "A school building is a system of spaces in which it is good to learn." This bright new schoolhouse should prove to be just that. Opened in January, 1965, for grades 7 and 8, it is located in a suburban community within the city limits of Little Rock. Henderson will enroll grades 7 through 9 from the fall of 1965 on.

In basic plan, the school is a rectangle, slashed through by a long central spar that houses all the common elements, from cafeteria at one end to gymnasium at the other. At the midpoint is the library, with courts on either side. Academic classrooms are grouped in a block to the north of the core, areas for home economics, shop, music, and art to the south. The school is completely air conditioned.

Outside, Henderson offers a nice play of light and shade. The walls are gray brick. The flat, white gravel roof joins the core area to the south and north wings by slanted skylights over the corridors.

This school offers still another variation on planning for change. According to the architects, Henderson was designed "as an educational laboratory to determine the kind of spaces best adapted to team teaching." The administration had in mind the ultimate possibility of a real "Trump school," variable groups, nongradedness, and all.[1] They have no such all-out goal in mind for this year or the next. According to Superintendent Floyd Parsons, the school will gradually introduce modular scheduling, team teaching, and large-group instruction and instruction in very small groups. "Teachers, like people generally, adjust slowly," says Mr. Parsons. "No radical changes are under way."

With so little disposition to immediate innovations, the school's administration and board have shown an edifying openness to eventual change. Henderson's layout as now constituted is "Phase One." "Phase Two" shows a possible transformation. In the space occupied now by academic classrooms, which is column-free, reinforced concrete columns at the periphery support long-span steel trusses—96 feet long on 12-foot centers. Between the trusses, the ceiling takes the shape of parabolic vaults formed of acoustical plaster over metal lathe. In addition to shaping the ceiling, the 12-foot vaults act as reflectors for the fluorescent fixtures which traverse their length, providing sound absorption and fire resistance. Today, the space is divided into 24 classrooms. Tomorrow the partitions can be rearranged to turn it into teachers' offices, seminar rooms, and large-lecture rooms, or any combination of such spaces.

"Walls will *never* become permanent," says Superintendent Parsons. A maintenance man with a screw driver can change them. The movable partitions, in 6-foot or 12-foot modules, were job-built

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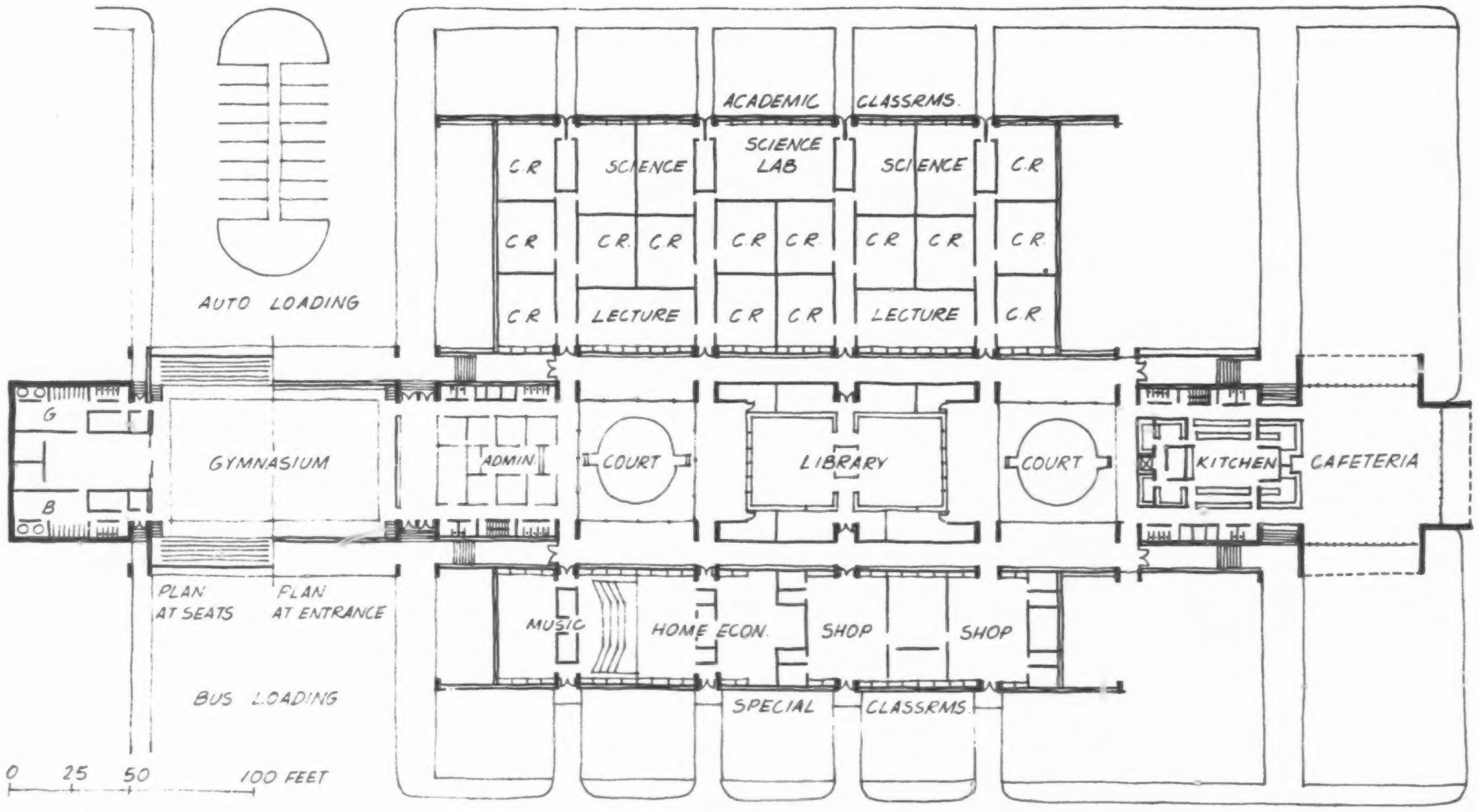
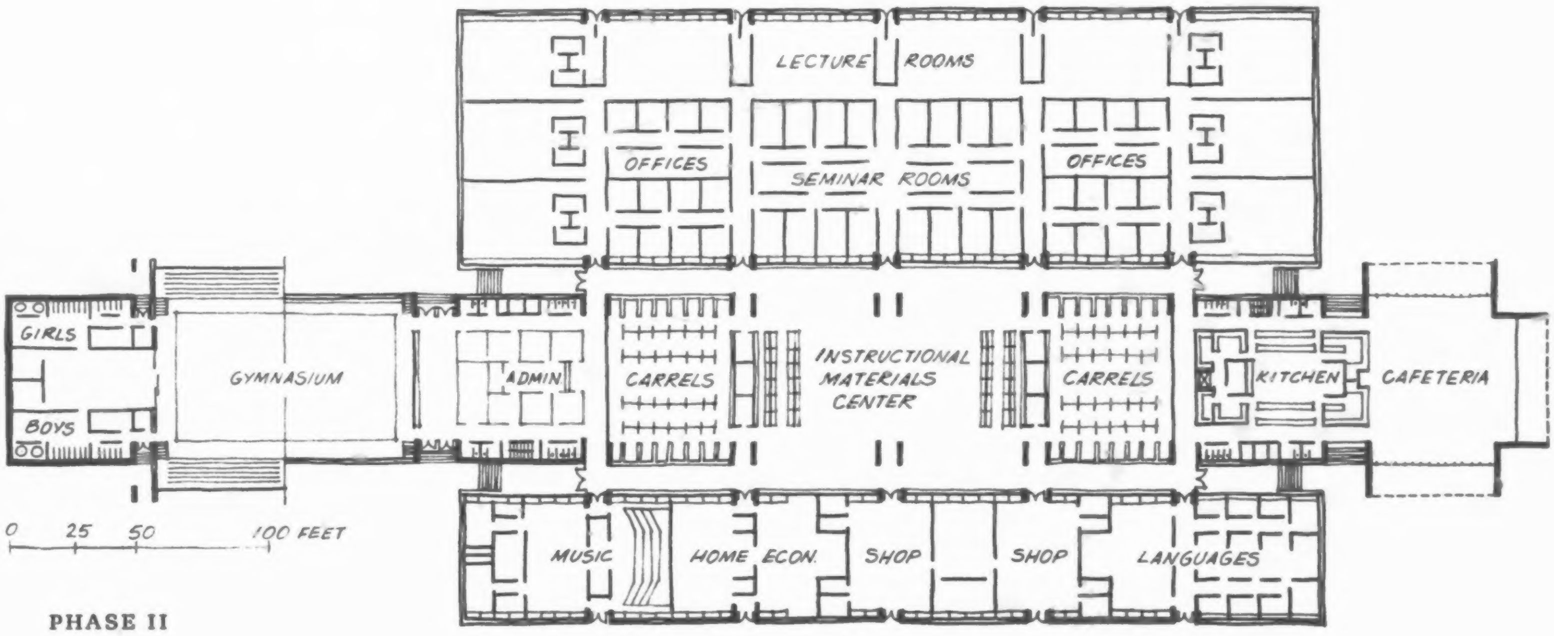
[1] See *Focus on Change: Guide to Better Schools*, by J. Lloyd Trump and Dorsey Baynham (Chicago, Rand McNally & Co., 1961).

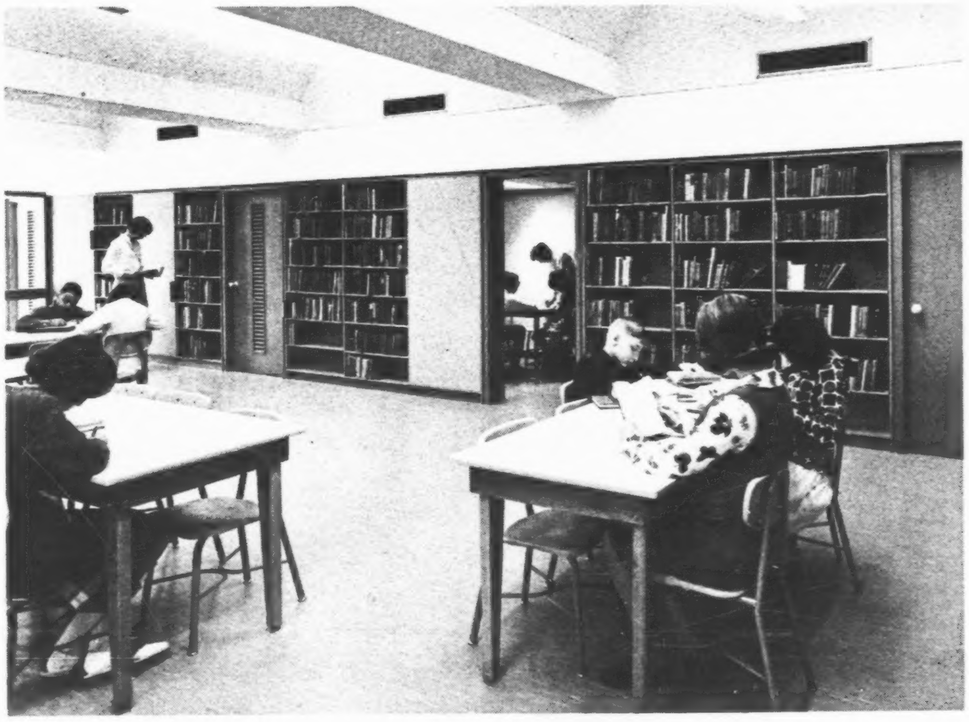

ACADEMIC CLASSRMS.
C.R
SCIENCE
SCIENCE LAB
SCIENCE
C.R
C.R
C.R. C.R
C.R C.R
C.R C.R
C.R
C.R
LECTURE
C.R C.R
LECTURE
C.R
AUTO LOADING
G
B
GYMNASIUM
ADMIN
COURT
LIBRARY
COURT
KITCHEN
CAFETERIA
PLAN AT SEATS
PLAN AT ENTRANCE
MUSIC
HOME ECON.
SHOP
SHOP
BUS LOADING
SPECIAL CLASSRMS.
0 25 50 100 FEET

PHASE I

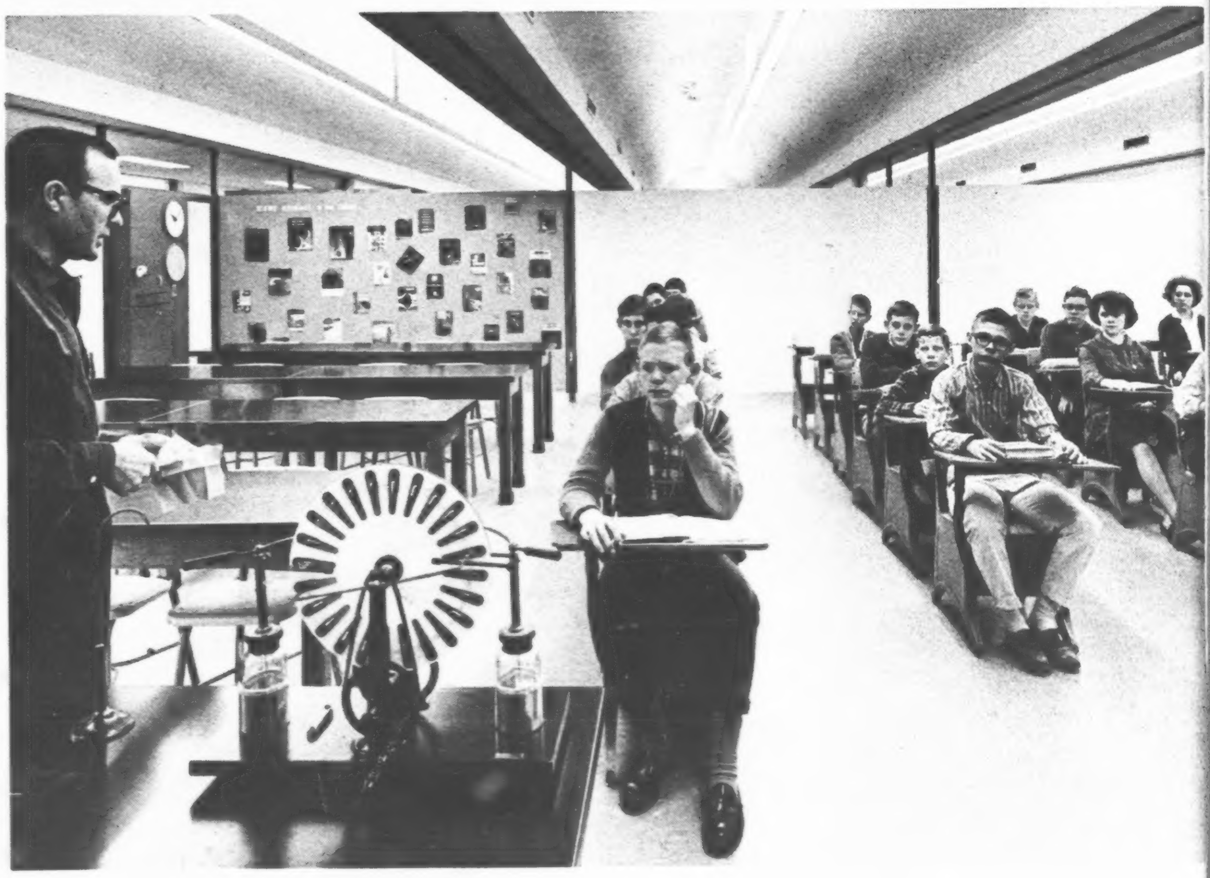
"Phase One," above, shows Henderson Junior High as it is at present. The original design presumes the school's ready conversion into "Phase Two," below, to accommodate more students and/or a different program. Key to the school's flexibility is use of demountable partitions designed in 6- or 12-foot modules that can be taken down and re-assembled by maintenance staff. If Henderson eventually adopts team teaching and other instructional innovations, the form of the school can change to suit the new functions. Thus, in Phase Two, a variety of large and small spaces will replace the standard classrooms, and the library will stretch to embrace the adjoining courtyards and become an extensive instructional materials center that is augmented by carrels for independent study.


LECTURE ROOMS
OFFICES
SEMINAR ROOMS
OFFICES
GIRLS
BOYS
GYMNASIUM
ADMIN
CARRELS
INSTRUCTIONAL MATERIALS CENTER
CARRELS
KITCHEN
CAFETERIA
MUSIC
HOME ECON.
SHOP
SHOP
LANGUAGES
0 25 50 100 FEET

PHASE II



Henderson's library in its present phase occupies two bays at the center of the common space that runs the length of the school. Class photographed, right, is meeting in one of the school's four science rooms. Demountable wall can be seen in the background. The photograph below shows one of two well-equipped shop areas. The design groups all academic teaching space to one side of the axial common space, and all special teaching space to the other. Needing more fixed apparatus, special areas are expected to change least as the school moves into Phase Two. The partitions here, while also demountable, reach from floor to ceiling.



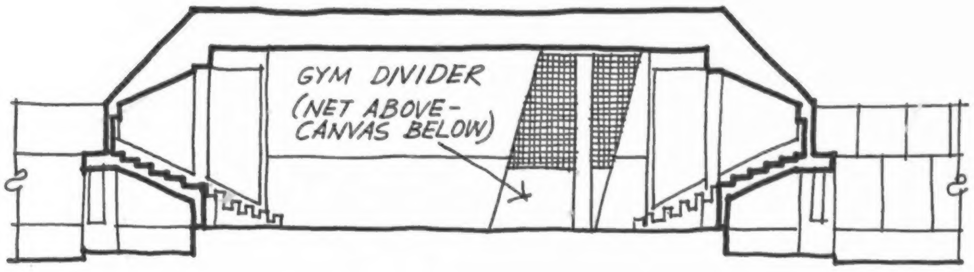
to specifications by the architect, at a considerable saving over factory-fabricated units. The partitions extend just short of floor and ceiling in the academic areas and serve primarily as visual screens. In the special areas for art and so on, similar movable partitions reach from floor to ceiling and serve as both visual and acoustical barriers.

Current plans call for a re-evaluation of the Henderson program in the summer of 1965, when administration and staff have had a term's experience in the new school. By then, they hope to have a better idea of how long it will take to convert Henderson to team teaching and other innovations. There is a manifest desire to rearrange those 24 classrooms.

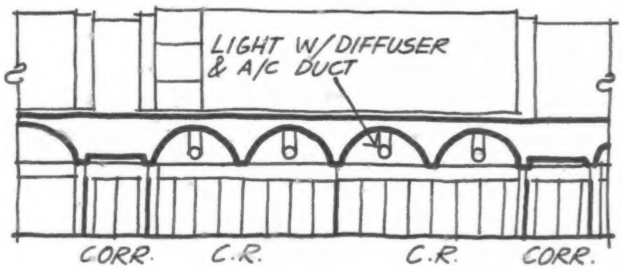
The library is fairly spacious, occupying two bays of the central area, with room for 10,000 books and 200 seated children. According to plan, the library would double in size to become the "instructional materials center," flanked with individual study carrels (which would occupy the erstwhile courts).

Henderson's architects consider the school an example of what they call "planimetric and spatial flexibility." Their solution, spurred by Superintendent Parsons' sense of educational change, was based on a careful analysis of the functions of school space, and the subsequent assignment of each space to one of three categories: academic teaching space, special teaching space requiring fixed apparatus (such as space for art, music, etc.), and common space (administration, library, cafeteria, physical education). Positioning and wall treatment reflect the order created by these categories.

Architects and administration alike see Henderson as a school where "our educational institutions can learn," together with the children.



Section drawing, above, shows gymnasium with rolldown device used to divide area in two sections, for girls and boys. Costing only a fraction of the price of the conventional divider, this device—which is electrically controlled—combines an upper section of heavy net with a lower section of heavy canvas. The cross section, below, diagrams the parabolic vaults that diffuse the lighting and that also carry the air-conditioning ducts.



HENDERSON
JUNIOR HIGH SCHOOL
Little Rock, Arkansas

Size: 84,623 sq. ft.
Cost: $1,179,453
Cost per sq. ft.: $13.94
Cost per pupil: $1,179
Air Conditioned

Grades: 7-9
Opened: January, 1965
Capacity: 1,000
Present Enrollment: 445
Superintendent: Floyd Parsons
Principal: Eugene Keeton
Architects: Wittenberg, Delony & Davidson
Designer: A. Byron Chapman

Building For "The Superintendent After Next"

Kennedy Junior High School

When Kennedy Junior High opened in April, 1965, in Natick, Mass., it enrolled students in the familiar 7-8-9 grade range, and it offered a fairly standard, departmentalized junior-high program; no team teaching, no efforts at nongradedness, minimum use of technology. What then sets it off from other new junior high schools, and makes it relevant to the middle-school concept? Two things, primarily: 1) its distinguished design; and 2) the care and imagination exerted by the school's administrators and architects to build "for the superintendent after next."

Natick, though it is only 17 miles from Boston, has little of the air of suburb about it. Prosperous and self-contained, the town (pop. 29,000) has largely replaced its old shoe industry with electronics and other science-based enterprises. Since the end of the war, Natick's social and economic level has risen sharply. Twenty years ago only about 30 per cent of the young people continued their education after high school. Now the percentage is 70.

The town built its second junior high school six years ago. Only four years later the need for a third was evident. School authorities again considered a 6-8 school, but local needs seemed to indicate another 7-9 school. There is some professional opinion in the Natick schools that favors keeping the ninth grader in a middle school "where he gets a chance to grow up," and where he can be top dog.

With a third school mandatory, Superintendent Alfred Maffeo took to architects in nearby Cambridge the problem of building a school that would not be hopelessly outdated for the educational program of 20 or 30 years hence. Mr. Maffeo had seen more than enough of fine, sturdy buildings good for half a century's service but wholly unadaptable to the instructional needs of a later generation. He was determined, therefore, not to saddle his successors with a building that memorialized, in bricks and mortar, the educational program of Natick 1965.

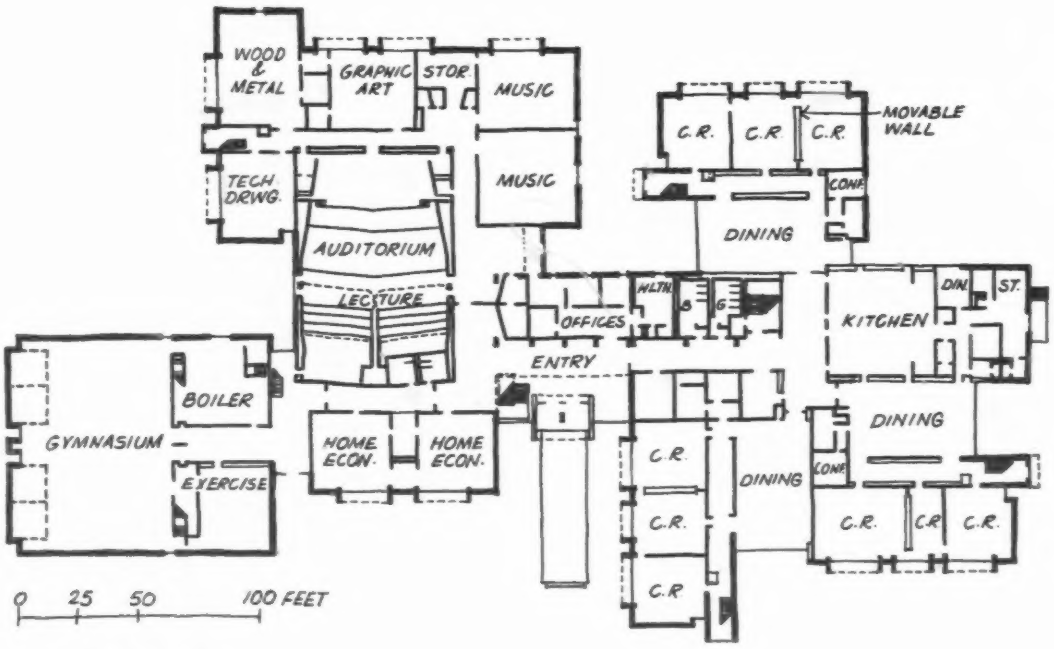
With a school board and staff sympathetic to his purpose, Mr. Maffeo went to work on the problem with architects Davies & Wolf, Freeman & Flansburgh. Paramount in the over-all design was to be flexibility—but *real* flexibility that would facilitate an entirely different school program without undue expense or time.

As the superintendent told *School Management* in 1964: "It's not one single gimmick or piece of equipment that gives a school adaptability—it's a series of well-planned features that work together to make the school usable for almost any curriculum."

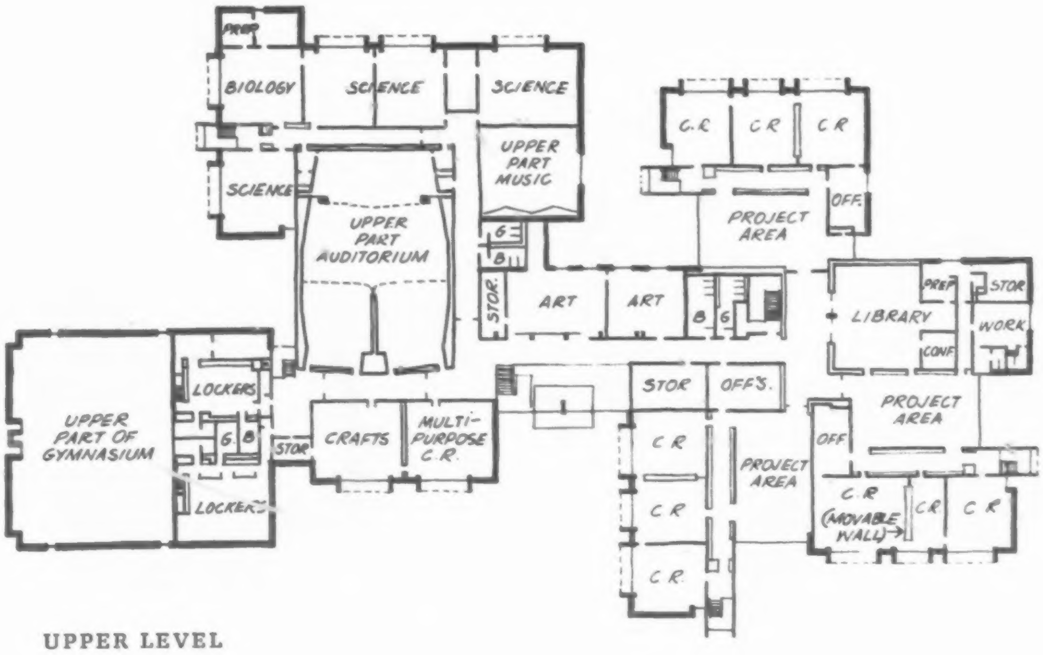
Kennedy is a three-house school like Bedford's, but with the houses combined in a single structure for reasons of economy, communications, and access to common facilities. The effort was to create a separate base in each house yet tie the parts together "so that a youngster will feel an identity with the whole school, whatever his base." Throughout the school, color plays an important part. Strong ochre, blue, and green are used to accent the identity of the individual houses (on doors, lockers, and so on).

The two-story brick and concrete building includes 21 all-purpose rooms, 12 of which are separated by 6 do-it-yourself removable walls (one such on each floor of each wing). Structurally each house, or wing, is identical, with its own dining room, project areas, and lockers. Dining rooms are lined with lockers which, recessed into thicker-than-ordinary walls, help to contain sound. The three wings have access to a common kitchen with three service lines on the lower level, and a library (or "instructional materials center") above.

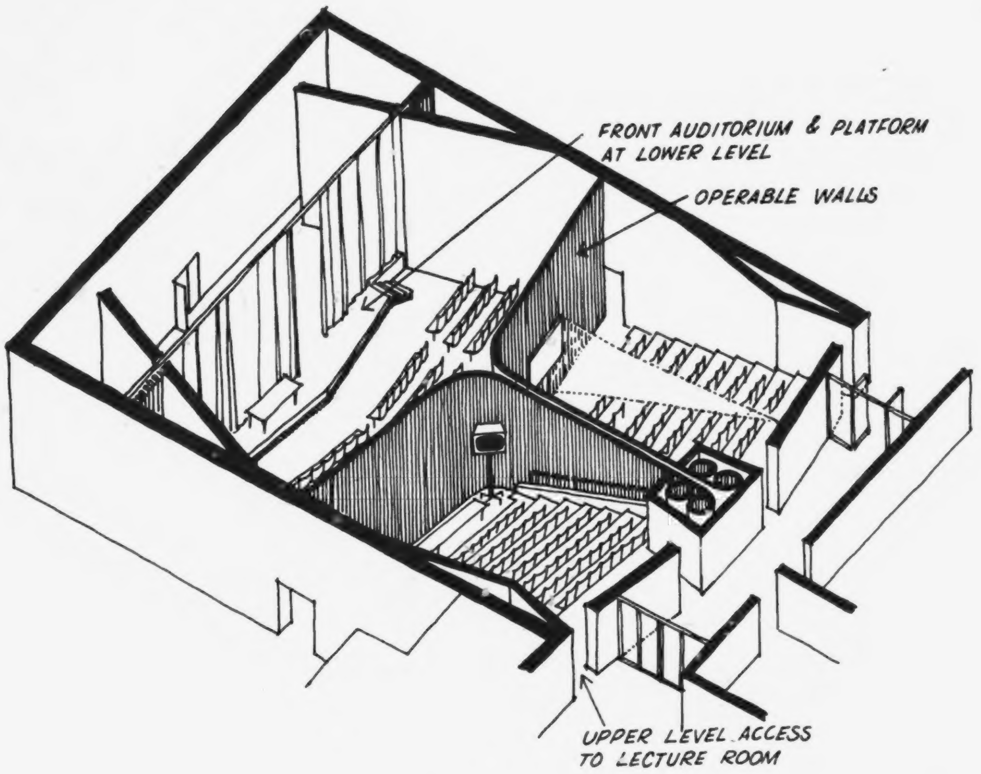
The library illustrates the foresight that informs the whole design. It is comparatively small, and the areas that surround it will probably be used as study halls. But they can and may soon be—even before the "next superintendent"—adjuncts to the library, complete with carrels and typewriters. Nearby is the teachers' workroom complete with stove and refrigerator (Massachusetts frowns on the term "teachers'


WOOD & METAL
GRAPHIC ART
STOR.
MUSIC
MUSIC
C.R.
C.R
C.R.
MOVABLE WALL
TECH. DRWG.
AUDITORIUM
LECTURE
CONF.
DINING
HLTH.
B
G
OFFICES
KITCHEN
DIN.
ST.
ENTRY
BOILER
GYMNASIUM
EXERCISE
HOME ECON.
HOME ECON.
C.R.
C.R.
C.R
DINING
DINING
CONF.
C.R.
C.R
C.R.
0
25
50
100 FEET

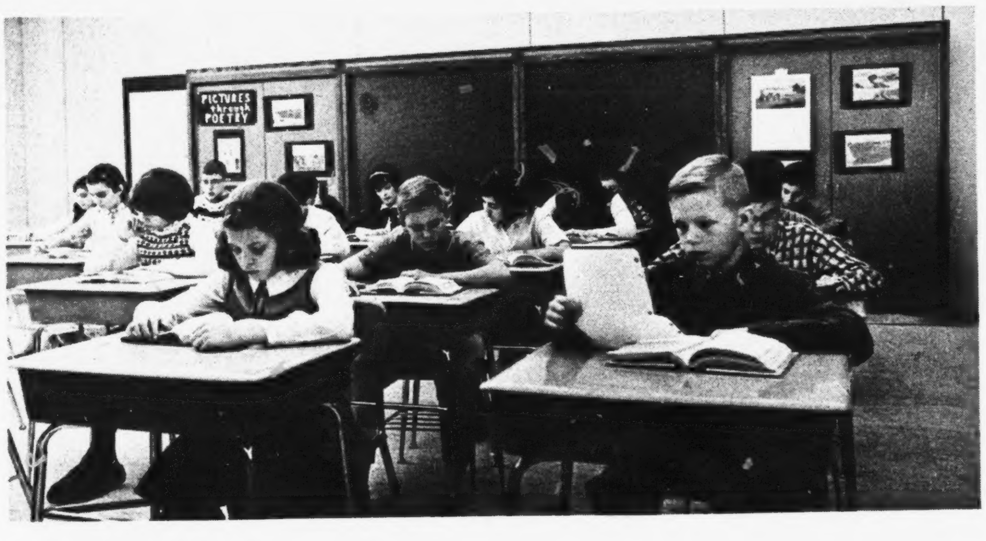
LOWER LEVEL


PREP
BIOLOGY
SCIENCE
SCIENCE
SCIENCE
UPPER PART MUSIC
C.R
C R
C R
OFF.
PROJECT AREA
UPPER PART AUDITORIUM
G
B
STOR.
ART
ART
B
G
PREP
STOR
LIBRARY
WORK
CONF
UPPER PART OF GYMNASIUM
LOCKERS
G
B
LOCKERS
STOR
CRAFTS
MULTI-PURPOSE C.R.
STOR
OFF'S.
PROJECT AREA
OFF
C R
C R
C R.
PROJECT AREA
C R (MOVABLE WALL)
C.R
C R

UPPER LEVEL


FRONT AUDITORIUM & PLATFORM AT LOWER LEVEL
OPERABLE WALLS
UPPER LEVEL ACCESS TO LECTURE ROOM

Cutaway drawing, above, gives details of Kennedy's convertible auditorium. Use of Coil-Wal rolling partitions divides the auditorium into three self-contained areas in a matter of minutes, eliminating the need for other lecture halls. Below, two views of a classroom show the permanent wall behind the teacher, and the demountable wall behind the children. Floor plans, opposite page, show access from each wing to common facilities —to library at the upper level and to kitchen at the lower level.



Kennedy Junior High School
(Continued)

lounge"). Serving all three wings is a central structure that will house administration on the ground floor and art rooms on the upper floor. For "a closer teacher-student relationship," each wing has its own guidance office on the ground floor, with a variety of seminar-sized rooms above. Again, adaptability: since Kennedy opened with a standard homeroom system, these seminar rooms will at first serve for small-group instruction. Later they may be used for teachers' offices.

Kennedy has a large gymnasium and a divisible auditorium, surrounded by areas for art, music, shop, home economics, and graphic arts. The school is not air conditioned (New Englanders tend to class air conditioning and swimming pools with gold door knobs), but it does have the luxury of a pair of double-coiled, sound-insulated, electrically operated partitions in the auditorium. In three minutes or so, the auditorium can be divided into three separate areas, each with its own access and audio-visual equipment. One sub-division will seat 250, the others 100 each. To transform the divisible classrooms, which have removable walls made in five-foot panels of solid-core construction, is more of a production, but the school estimates that the rooms could be readily changed by the maintenance crew over a weekend. These walls include casework, with doors faced in tack-board or blackboard, and provide additional sound attenuation.

The superintendent and his aides are engagingly relaxed and nondefensive in their appraisal of the new wave in education. The new school includes well-equipped language and science laboratories, and sundry elements of the new curriculums. As they see it, team teaching, nongradedness, extensive use of television and other

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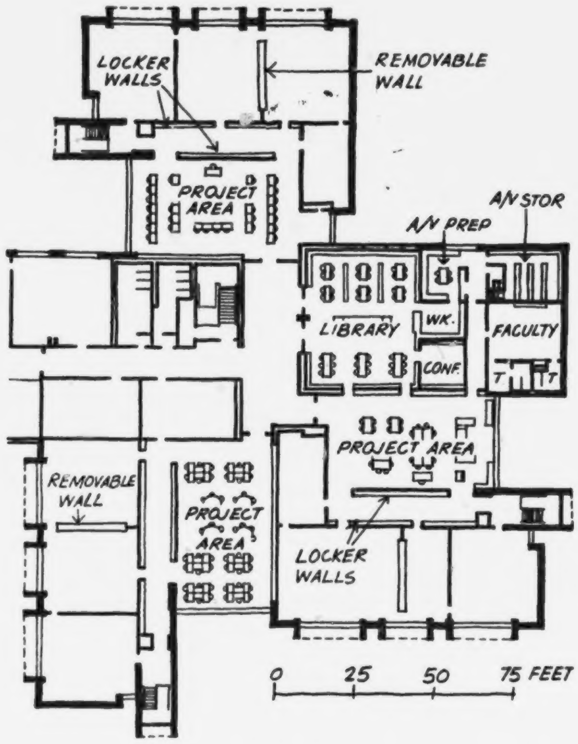
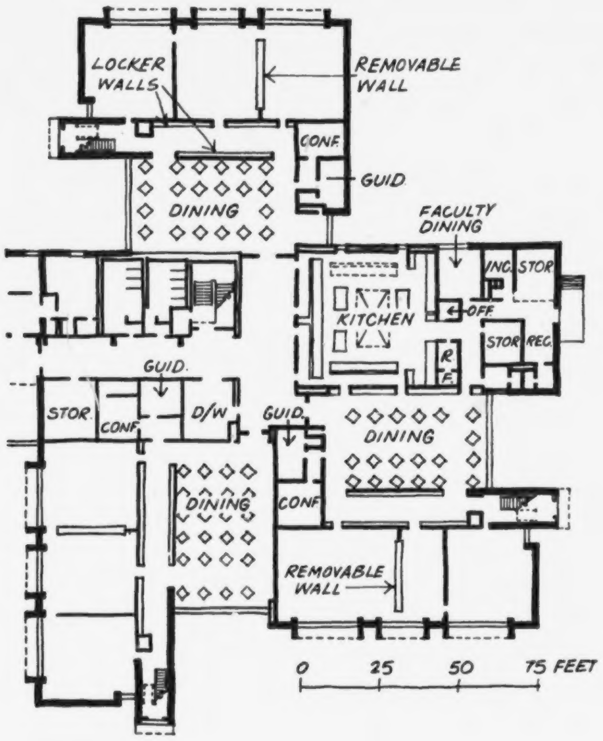
technological devices will come—but not now in Natick. The school system sent teachers to several of Harvard's summer programs but "these programs are still experimental and in need of further evaluation," reports Assistant Superintendent William M. Carey.

Natick's plan looks forward to a fourth house to take care of future expansion. The kitchen is sized to accommodate a fourth service line, the utilities are in place, and the auditorium, gym, and specialized classrooms are planned to accommodate up to 1,200 children (as against the present capacity of 900).

Only time (an approved New England commodity) can tell whether Natick school people and their architects have produced a truly flexible building — so that "no matter which way the curriculum swings, this building will swing with it." The evidence on hand supports the belief. A final note on the school system's easy traffic with newfangled notions. To double-check their space utilization, Mr. Maffeo had the Natick architects take advantage of GASP, a new computer program, to simulate the new school in operation and determine the best use of the building for a traditional program or for "the more advanced ones we had envisioned for the future."[1] The results showed that Natick could have run their current schedule with the very high utilization rate of 85 per cent, and eliminated two planned classrooms. But Mr. Maffeo figured the feasible reduction of space might have hampered some future superintendent, who needed expansion or wanted a different kind of program. "We plugged this information into the computer," says he "and—statistically—it agreed."


LOCKER WALLS
REMOVABLE WALL
PROJECT AREA
A/V STOR
A/V PREP
LIBRARY
WK.
FACULTY
CONF.
T
T
PROJECT AREA
REMOVABLE WALL
PROJECT AREA
LOCKER WALLS
0
25
50
75 FEET


LOCKER WALLS
REMOVABLE WALL
CONF.
GUID
DINING
FACULTY DINING
INC. STOR
KITCHEN
OFF
STOR
REC.
R
F
GUID.
STOR.
CONF.
D/W
GUID.
DINING
DINING
CONF.
REMOVABLE WALL
0
25
50
75 FEET

KENNEDY
JUNIOR HIGH SCHOOL
Natick, Massachusetts

Size: 110,000 sq. ft.
Cost: $1,895,145
Cost per sq. ft.: $17.23
Cost per pupil: $2,106

Grades: 7-9
Opened: April, 1965
Capacity: 900 (550 to start)
Superintendent: Alfred A. Maffeo
Assistant Superintendent: William Carey
Architects: Davies & Wolf,
Freeman & Flansburgh
M. Wyllis Bibbins, *Job Captain*

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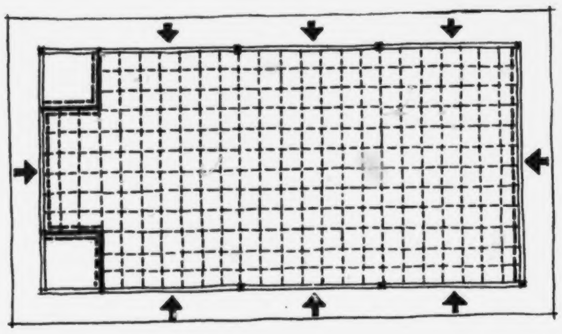
[1] See *School Scheduling by Computer/The Story of GASP* (New York, Educational Facilities Laboratories, Inc., 1964).

THREE FROM CALIFORNIA

As everybody knows, anything that is good or bad or big or explosive goes double in California. The multiplier is notably active in education. The state that produced our first multiversity and has built a network of community colleges almost overnight is predictably a front-runner in the development of junior high schools. California junior highs come in a wide variety of grade organizations. There are many two-year (7-8) schools, and the legal designation is apt to be "intermediate school." State law governing the establishment and powers of school districts has much to do with making this a common pattern. High school districts having jurisdiction over four-year schools are the rule. Sheer enrollment pressures in the separate elementary-school districts thus often dictate the creation of separate schools to house the seventh and eighth grades.



Ardis G. Egan School (Addition)

The succeeding pages present a California picture portfolio of two new 7-8 schools and one new addition to a 7-8 school. The Ardis G. Egan School in Los Altos opened in September of 1960 for 234 pupils, with neither a library nor special science space. The need for both was soon manifest, and in May, 1963 a separate building containing a library, science laboratory, and two social-studies classrooms was added. The facility, which was designed by A. A. Hoover Associates, is notable for several reasons. For one, it has relatively unlimited flexibility. There are no load-bearing interior walls—they are all demountable and spring-loaded. Once the tension is removed, the walls come off in sections to be reassembled and produce spaces of any shape or size desired. Ardis Egan also illustrates the growing use of prebuilt components—in this case, Western Skies' modular ceiling and partition system. A modest EFL grant assisted in the planning.

ARDIS G. EGAN SCHOOL (Addition)

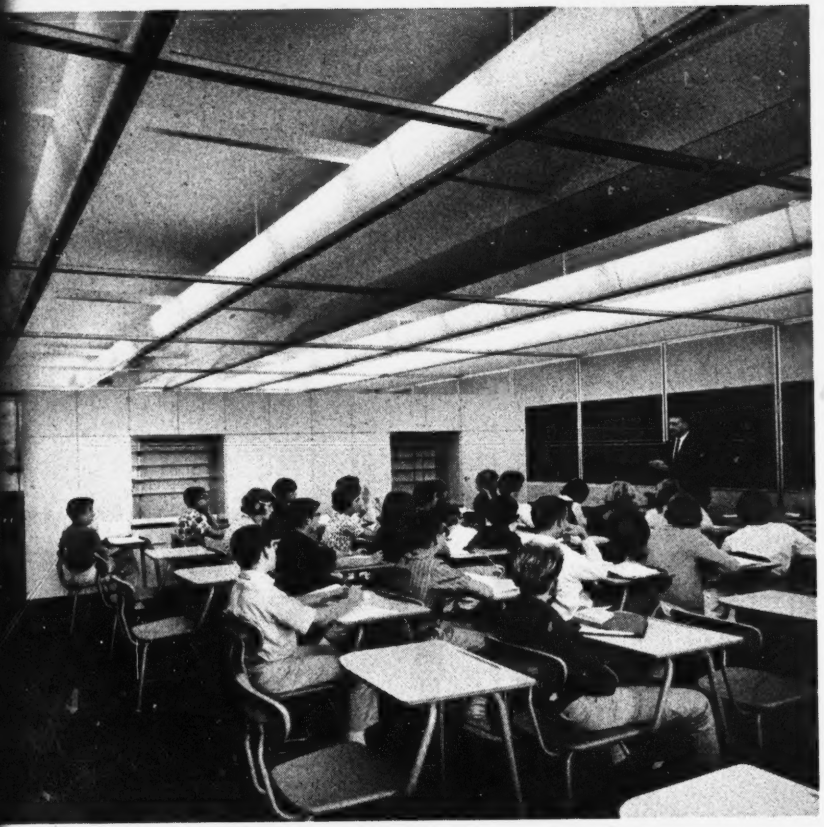
Los Altos School District

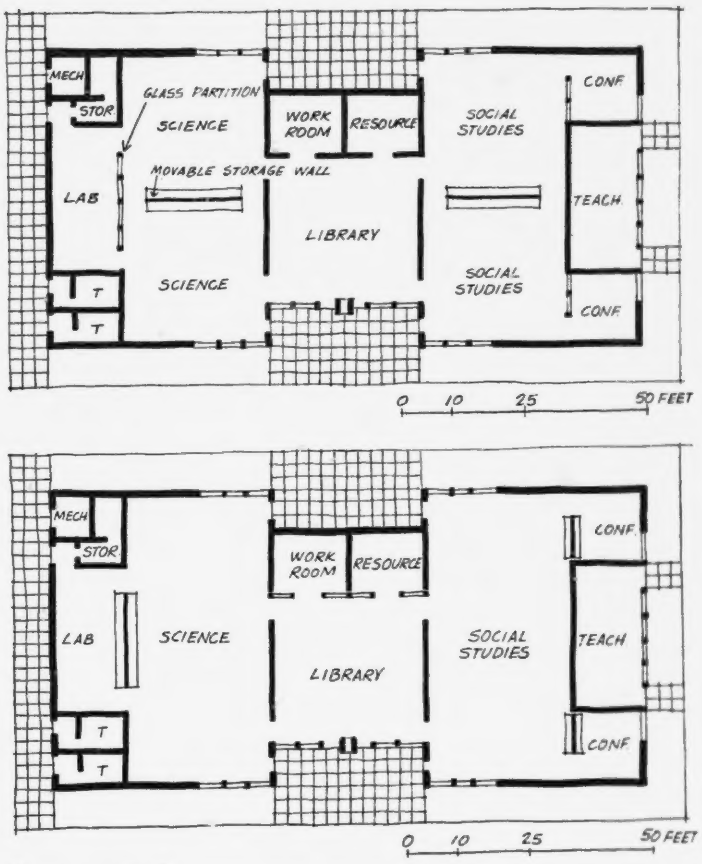
Los Altos, California

Size: 8,753 sq. ft.
Cost: $135,528
Cost per sq. ft.: $15.48
Cost per pupil: $904

Grades: 7-8
Opened: May, 1963
Capacity: 150*
Superintendent: H. Lawson Smith
Principal: John Griffith
Architects: A. A. Hoover Associates

**School enrollment is 350. Addition was planned to accommodate 150 children—only for four classrooms and a library.*




MECH
STOR
GLASS PARTITION
SCIENCE
WORK ROOM
RESOURCE
SOCIAL STUDIES
CONF.
MOVABLE STORAGE WALL
LAB
LIBRARY
TEACH.
SCIENCE
SOCIAL STUDIES
T
T
CONF.
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RESOURCE
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LAB
SCIENCE
LIBRARY
SOCIAL STUDIES
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CONF.
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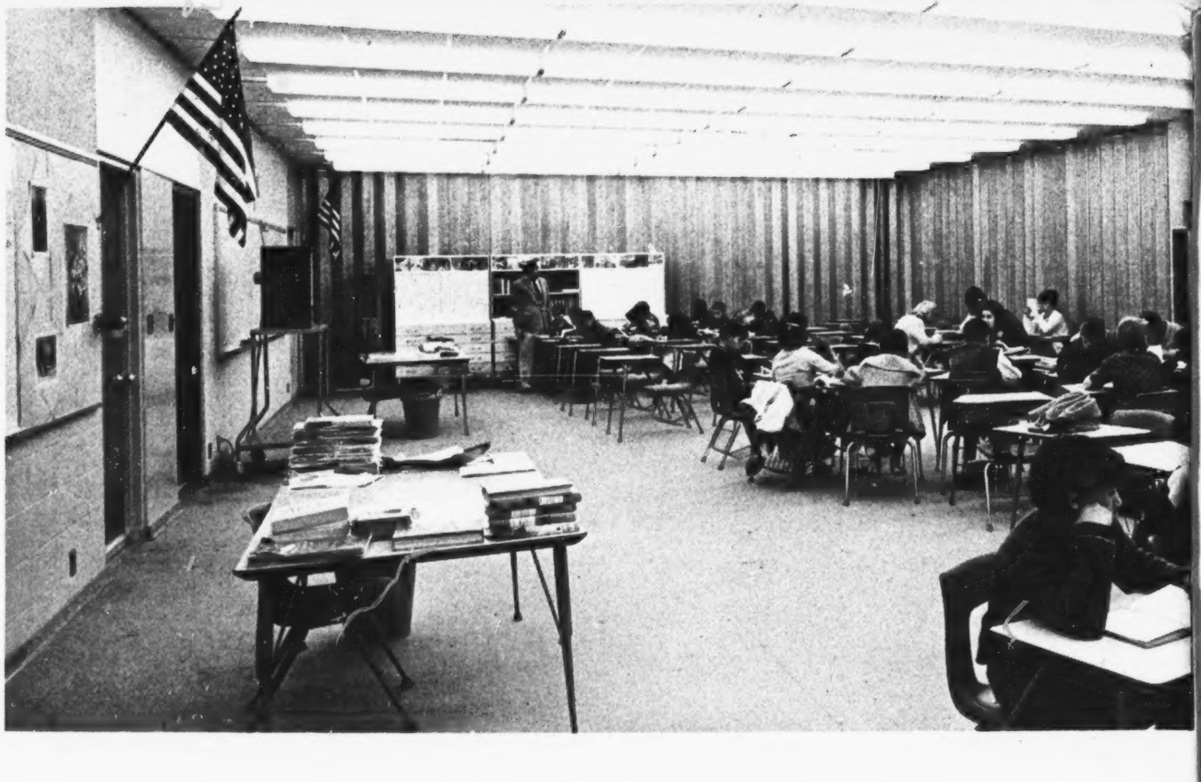
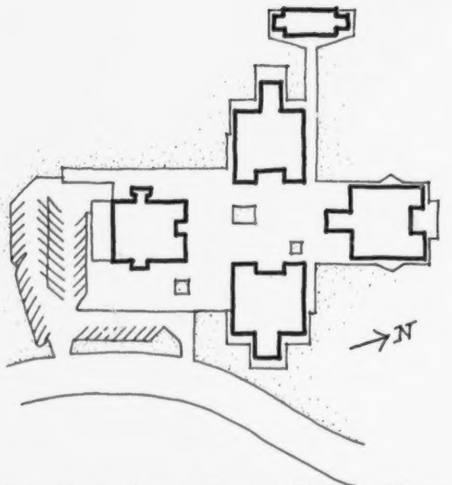
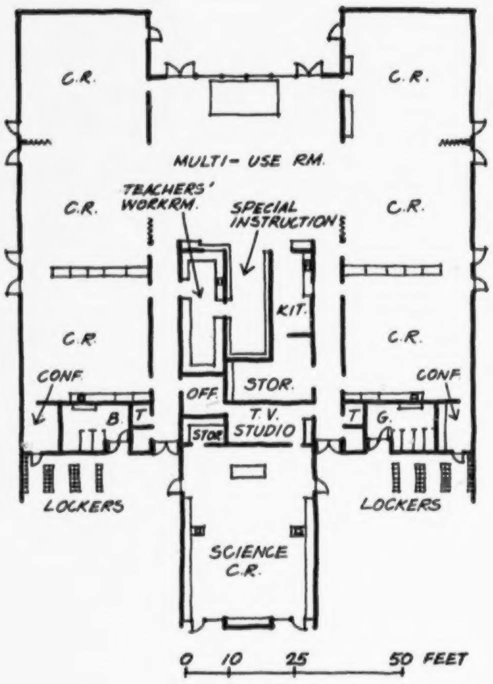
The Ardis Egan addition is basically a simple rectangle, fully carpeted except for the laboratory area. On the basic plan, left, only the walls drawn in solid black are permanent (for washrooms, mechanical equipment). Picture, above, shows demountable storage unit acting as classroom divider. Floor plans, right, show present arrangement, top, and projected new open arrangement, with storage walls and glass partitions switched about.





Site plan, above, shows Giano's three identical academic houses around the central courtyard, with administration and library building on the fourth side and locker building beyond. Typical house floor plan, below, indicates generous use of open instructional space.



Giano School

The Giano School, in West Covina, stands stark and unlandscaped against the beauty of the San Gabriel Mountains. Now enrolling 750 students, Giano divides its enrollment among three houses. There are about 240 seventh and eighth graders in each, taught by a seven-teacher team. Administration and staff are enthusiastic about team teaching (one man who had the greatest initial resistance to the innovation is now a team leader). The buildings were designed by Lee B. Kline who worked closely with Assistant Superintendent Raymond F. Cook and Harris A. Taylor, consultant from the Claremont Graduate School. The new school has made its advantages felt in many ways—high staff morale, a warm response among teachers to the challenge and companionship of working together, and, above all, more intimate, informed understanding of each child and his needs. The district psychologist is much struck with the staff attitude toward children

GIANO SCHOOL
Rowland School District
Rowland Heights, California

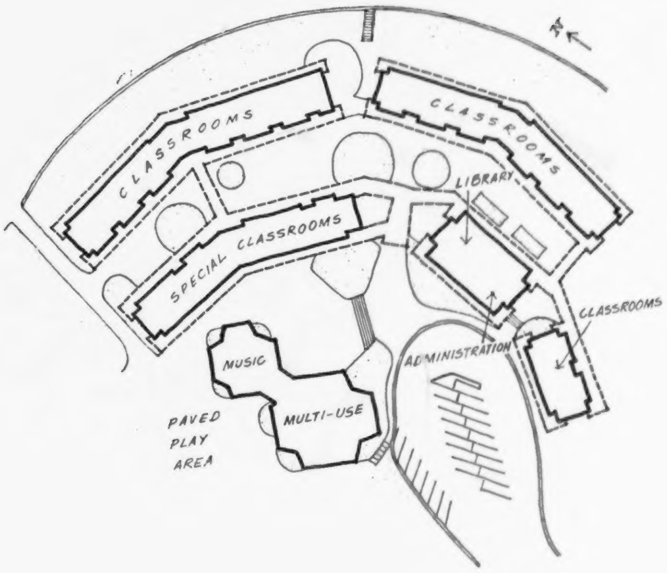
Size: 49,733 sq. ft.
Cost: $800,000
Cost per sq. ft.: $16.09
Cost per pupil, $1,111
Air Conditioned

Grades: 7-8
Opened: Fall, 1964
Capacity: 720
Present Enrollment: 750
Superintendent: Stanley G. Oswalt
Assistant Superintendent: Raymond F. Cook
Principal: Gerald Evans
Architects: Lee B. Kline & Associates

Giano achieves considerable flexibility through the use of movable cabinets and partitions. As floor plan, opposite, *shows, each house contains two triple-classroom areas opening into multipurpose area that can be used in a variety of ways.* Photograph, above, *shows one arrangement, with double classroom closed off by accordion partition and two members of teaching team at work* Right, *teachers workroom with seven-member team at work, and,* below, *multipurpose room in use as cafeteria.*

in this school in contrast to the conventional school with its self-contained classrooms. Giano teachers, he says, "want to know what the student really is;" as one result, the team teachers can handle all but the most extraordinary guidance problems.

Giano is windowless, air conditioned, and carpeted throughout (except for certain special areas, such as the science room). Yet the school, in a working-class and heavily Latin American district, was brought in at a modest $16.09 per square foot. Each house has a central multipurpose ("million" purpose) room, a small teachers' workroom, and two small seminar rooms with carrels for four students. With no large assembly space other than the bare and sun-baked courtyard, Giano makes good use of its closed-circuit television for disseminating announcements and programs of common interest, as well as for Spanish and science lessons. Giano's generally open plan and ingenious utilization of space typify an important trend in California school construction: of the schools now being built in the state, 75 per cent provide for some open instructional areas.



Del Mar Community Intermediate School

The Del Mar Community Intermediate School is a felicitous combination of architecture, setting, and instructional program. In Marin County, across the Golden Gate Bridge from San Francisco, the school serves the handsome, high-income communities of Tiburon and Belvedere. The site, overlooking San Francisco Bay, is at the lower end of a small valley that was originally threaded with gullies. The school's buildings were placed on high ground at one end of the site, curving around the hillside and centering on a huge eucalyptus tree. With the gullies drained and filled, most of the flat bottom-land was available for a playfield. Nearly all the trees were preserved. The layout includes a variety of buildings, with sloped shingled roofs and courtyards.

Del Mar was designed with a specific commitment to better (i.e., more individualized) teaching and the flexible spaces this goal requires. The district was also determined to keep costs down despite design innovations, and to make the buildings adaptable, not only to changing educational needs, but also to an array of community uses. Success thus far is impressive. Total cost for the building, completed in May, 1964, was substantially lower ($15.02 per square foot) than the average California building of its type. It is already in heavy use for community activities, including night-school classes, Girl and Boy Scout meetings, planning-commission meetings, and cultural programs of all kinds. The instructional program, squarely based on team teaching with nongradedness in view, makes use of flexible spaces for student groups ranging from one to 100 or more.

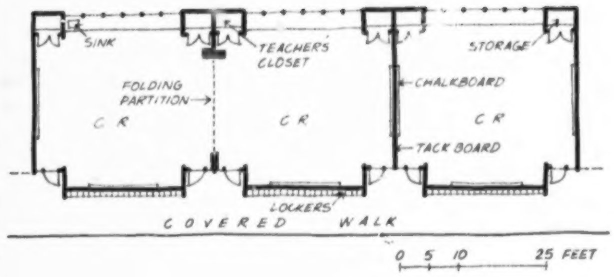
Besides 13 regular classrooms, there are special facilities for the sciences, foreign languages, the arts, music, and other special fields. The lecture-music hall, which is convertible into a little theater, is used for large-group instruction, for chorus and orchestra, and for many of the community activities. The faculty was involved from the start in developing program and curriculum, collaborating with the architect to match design to educational purpose. The original design was even changed in process, as enthusiasm for team teaching developed under a new administration; the interior of the school as completed differs quite markedly from the original plans.

The staff rates the school's aesthetic distinction high among the factors that set the atmosphere of Del Mar and help to "keep the intellectual level high." As architect J. Martin Rosse says: "We wanted to give these seventh and eighth graders something more sophisticated than elementary school—something to live up to rather than surmount."

DEL MAR COMMUNITY INTERMEDIATE SCHOOL
Reed Union School District
Tiburon, California

Size: 43,377 sq. ft.
Cost: $651,350
Cost per sq. ft.: $15.02
Cost per pupil: $1,086

Grades: 7-8
Opened: May, 1964
Capacity: 600
Present Enrollment: 345
Superintendent: Edward C. Pino
Principal: Robert Gaw
Architects: Callister & Rosse
J. Martin Rosse,
Project Architect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FOLDING PARTITION
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TACK BOARD
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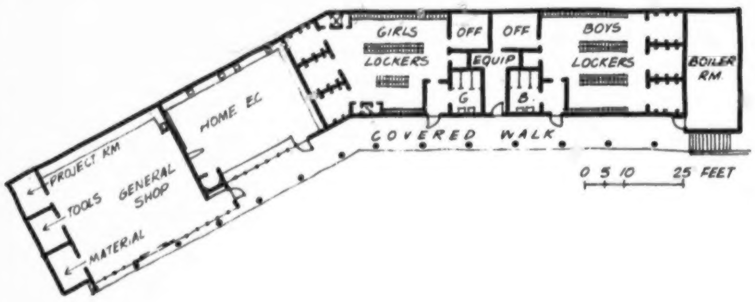
GIRLS LOCKERS
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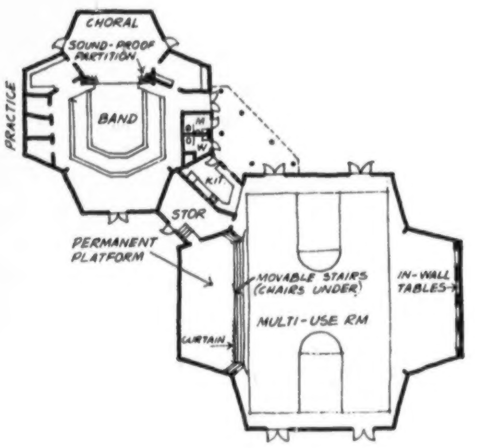
CHORAL
SOUND-PROOF PARTITION
PRACTICE
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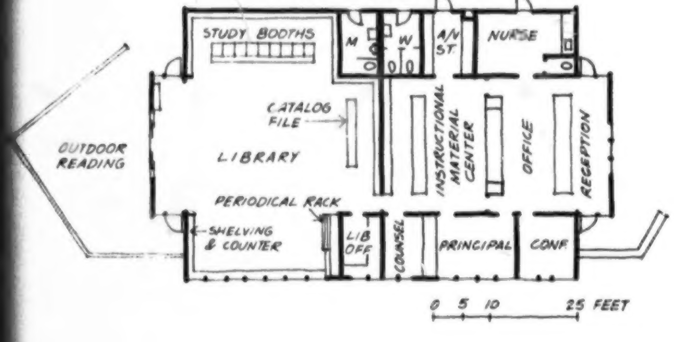
M
W
KIT
STOR
PERMANENT PLATFORM
MOVABLE STAIRS (CHAIRS UNDER)
IN-WALL TABLES
MULTI-USE RM
CURTAIN

Del Mar Intermediate School is nestled into a residential hillside in lush Marin County, Calif., and serves Belvedere and Tiburon. The school thrives on natural advantages and long-headed planning. Site plan, opposite page, gives general disposition of buildings around the uneven site (next page: the giant eucalyptus tree that constitutes a focus for the entire complex). Floor plans on this page show, top to bottom, typical classroom wing with folding partitions; special-classroom wing; building for music and other uses; and library and administration building. In the photograph, above, classrooms are thrown together. Below, a happy language-laboratory worker.


COVERED WALK
STUDY BOOTHS
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CATALOG FILE
LIBRARY
OUTDOOR READING
INSTRUCTIONAL MATERIAL CENTER
OFFICE
RECEPTION
PERIODICAL RACK
SHELVING & COUNTER
LIB OFF
COUNSEL
PRINCIPAL
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